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TREATMENT OF HYPERTENSION WITH HEXAMETHONIUM BROMIDE.

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RECENT reviews on the treatment of hypertension with hexamethonium bromide (C6) have assessed opinion as on the whole favourable (Editorial, 1952; Hayden, 1952), although bitter criticism of its value continues to be expressed by some (Locket *et alii*, 1952), and others are rather lukewarm (Page, 1951). The present article details the experience in this unit with C6 over a period of eighteen months.

The patients on whom it is based had been under treatment at the time this article was compiled for from three to eighteen months. In 21 cases the period of continuous treatment was more than six months. The patients all had hypertension of considerable severity with minimal diastolic blood pressures of 120 millimetres of mercury or more prior to treatment. Of the 45 patients 14 were males and 31 females. Their average age at commencement was 42·5 years. Manifestations could be tabulated as in Table I.

The ætiological basis of the hypertension as far as could be judged from history and clinical findings was as follows: essential hypertension 23, chronic glomerulonephritis 13, chronic pyelonephritis 2, possibly a sequel of pregnancy toxæmia 4, possibly lead poisoning 2, acromegaly 1.

The high proportion of cases of renal origin will be noted.

All the patients were in hospital at the time of initiation of treatment. With the exception of three, who succumbed before leaving hospital, all have attended as out-patients at a special follow-up clinic held between 8.30 and 10.30 a.m., when the hypotensive effect of the morning dose is usually apparent.

Since the drug was available initially in the form of tablets only, for some time all patients were given it orally. We early found that to maintain a persistent fall in blood pressure throughout the day was impracticable. It seems that individual doses of a certain magnitude for each patient are necessary to produce a fall in blood pressure, and that the total daily dosage should be in the form of two or three moderately large doses rather than a number of small ones. Thus a dose of 2·0 grammes a day given in two doses of 1·0 gramme (four tablets) may produce two periods of relief from hypertension per day, whereas the same amount given in four doses of 0·5 gramme each will have no influence on the blood pressure while exposing the patient to most of the same side-effects. Too frequently repeated doses, each sufficiently large to produce fall in blood pressure, are dangerous in that the hypotensive effect of one may run on into the hypotensive period of the next. It is impossible to predict the interval between ingestion and maximal effect, or the duration of significant hypotension. Our practice has been to give oral therapy with C6 in the form of two doses per day, the drug being crushed up and given before meals.

In theory it seemed a little problematical whether two brief periods of diminution of blood pressure each day would be adequate to confer any real benefit. However, we soon found

that at least certain manifestations of hypertension were definitely alleviated, namely, the changes in the fundi and those of congestive heart failure; and on the basis that improvement in these manifestations was indicative of a general improvement in the state of cardio-vascular integrity, we have continued to use this scheme of dosage even when administering the drug parenterally.

Except in cases in which rapid relief of blood pressure was essential—as with congestive cardiac failure or severe hypertensive cerebral symptoms — we have continued to initiate treatment by the use of tablets. A certain proportion of

TABLE I.

Symptoms.	Incidence.	Signs.	Incidence.
Exertional dyspnœa ..	31	Cardiac enlargement ..	23
Paroxysmal nocturnal dyspnœa	5	Gallop rhythm and/or *pulsus alternans* ..	12
Cardiac pain on exertion	12	Congestive cardiac failure	11
Headache	30	Evidence of cerebral vascular disease ..	10
Hypertensive encephalopathy	11	Fundal changes[1]:	
		Grade I	2
		Grade II	23
		Grade III	4
Visual disturbances ..	6	Grade IV	11

[1] Grading according to criteria of Kieth, Wagener and Barker.

patients obtains a satisfactory effect, and because of its great convenience this method of treatment is always worth a trial. The response to oral therapy is shown in Table II.

The patients classified as "definitely benefited" all had severe hypertensive manifestations, either cerebral or cardiac, before institution of treatment, and these in all cases have been unequivocally relieved.

The cases in which assessment of treatment depended on relief of symptoms have been included in the group "Dubious benefit, oral treatment continuing". However, treatment has not been continued unless there has been definite evidence of effective hypotension after the C6 therapy and unless the patients have expressed themselves as satisfied that they are continuing to derive benefit.

As has been commented on by Hayden (1951), it is in cases in which there is significant impairment of renal function that oral hexamethonium therapy can most be counted on to be effective. No doubt this is because impairment of filtration rate leads to more prolonged activity of the moiety absorbed. It is thought that C6 once absorbed is disposed of by the body solely by filtration in the kidneys (Young, de Wardener and Miles, 1951). In our "Definite benefit" group three have renal disease of considerable severity (blood urea level consistently more than 100 milligrammes *per centum* or inulin and diodrast clearances less than 50% of expected normal).

Additionally amongst the "Deaths" there were three cases in which the patients for a considerable period derived such benefit as to make certain claims justifiable.

The first patient of this group (E.J.M.) was a male, aged thirty-seven years, who was known to have chronic nephritis. He was admitted to hospital with congestive cardiac failure, which for six months had incapacitated him in spite of digitalis, mercurial diuretics *et cetera*. The blood pressure was 260 millimetres of mercury, systolic, and 160 millimetres diastolic, and the fundi Grade IV. The blood urea content was 134 milligrammes *per centum*, the inulin clearance 15 millilitres per minute and the diodone clearance 52 millilitres per minute. With a dose of 1·0 to 2·0 grammes per day by mouth, which he adjusted himself according to his symptoms, he was able to resume lucrative work at home on electrical equipment. There was no doubt but that C6 relieved his congestive cardiac failure, and in addition after its administration the fundi reverted to Grade II. However, the blood urea level steadily rose, and he died of uræmia ten months after commencing treatment.

The next patient (M.L.) was a female, aged twenty-one years, who was under the care of Dr. Paul Schafer. She presented with symptoms of increased intracranial pressure. The fundi were Grade IV. Under oral treatment her symptoms remitted, and apart from one relapse she became virtually symptom-free. She needed only 0·5 gramme twice daily by mouth. However, she died suddenly and quite unexpectedly from a cerebral vascular accident after thirteen months of treatment.

The third patient (A.M.) was a fifty-five years old female, whose manifestations were symptomatic only, but who was most emphatic as to the degree of relief from headache conferred by oral C6 therapy. She died suddenly of a cerebral vascular accident after eleven months of therapy.

Of the remaining six deaths, two more were from uræmia, one from coronary occlusion, and three from cerebral vascular disease.

It is evident, as expected, that the progress of severe renal disease is not appreciably checked by C6 therapy, although its hypertensive manifestations may be relieved. Whether progression of renal disease in earlier cases can be delayed remains to be seen. By relief of congestive cardiac failure, however, the apparent state of renal function, as illustrated by the height of the blood urea level, may initially be somewhat improved. The liability to vascular accident, cerebral or cardiac, occasioned by the vascular damage prior to initiation of C6 therapy cannot be expected to be abolished, although if the frequently observed regression in fundal changes is any guide, it should be diminished.

TABLE II.

Results.	Number of Cases.
Deaths	9
No significant benefit, treatment suspended ..	6
Dubious benefit, method changed to injections	12
Dubious benefit, oral treatment continuing ..	9
Definite benefit, oral treatment continuing ..	9

Of the twelve patients in the group "Dubious benefit, method changed to injections" some were under treatment by the oral route for a considerable period before being changed over. Others were started on injections after a brief trial of oral treatment had proved unsatisfactory. Still others were started on injections, and after control of immediate symptoms, given a trial of treatment by mouth but without success. The injected dose varied from 75 to 250 milligrammes given twice daily.

When measurement is made of the effect on the blood pressure in these patients, the importance of measurement in the erect posture, as well as lying or sitting, must be stressed. At times it is only in the erect position that what may be a quite pronounced hypotensive effect is demonstrable. If this precaution is not taken, dosage may be increased to dangerous levels unwittingly.

In the initiation of parenteral therapy an initial dose of 25 milligrammes has been used, increasing to 35 milligrammes at the next dose, 50 milligrammes at the next, and thereafter by increments of 25 milligrammes to 100 milligrammes and on by 50 milligrammes to the required figure. We have obtained interesting physiological data by the intravenous administration of C6 (McQueen, 1952), but it would not seem worthwhile as a routine method for estimating the initial dose. The tolerance of the patient rapidly increases, but once a given dose has proved effective on three or four consecutive occasions, that dose will usually continue to be efficacious. After some months several of our patients have had to decrease the dose because of excessive C6 effect. Our patients have so far had no great difficulty with syringe technique.

Parenteral treatment, as advocated by Smirk and Alstad (1951), gives much more consistent effects on the blood pressure than does oral therapy, both in terms of time of onset and duration and in terms of intensity. We consider it indicated from the commencement in cases in which there are acutely dangerous hypertensive manifestations.

One patient only amongst those treated by injections has died, a young man of twenty-two years with malignant hypertension of uncertain ætiology, and this death occurred at a time when our experience was very limited. The 12 remaining patients continue to do well, although 11 of them had conditions of considerable severity, five with Grade IV fundi, three with Grade III. A further three had severe hypertensive heart disease. The remaining one, a boy of seventeen years with idiopathic hypertension of severe degree, but without vascular breakdown, is receiving C6 parenterally as a trial of its value in prophylaxis.

Toxic Manifestations.

All patients suffer some inconvenience from the treatment. In fact if patients do not admit to some degree of dryness of the mouth and/or blurring of vision after each dose, it is fairly certain that they are not receiving or absorbing an adequate dose. With oral dosage absorption is so inconstant that a dose which produces significant hypotension with reasonable consistency may be expected at times to produce undesirable

TABLE III.

Day.	Patient R.L.		Patient E.R.		Patient C.L.[1]		Patient W.S.[2]		
	Dose. (Milligrammes per 24 Hours Injected.)	Excretion. (Milligrammes per 24 Hours.)	Dose. (Milligrammes per 24 Hours Injected.)	Excretion. (Milligrammes per 24 Hours.)	Dose. (Milligrammes per 24 Hours Orally.)	Excretion. (Milligrammes per 24 Hours.)	Method of Administration.	Dose. (Milligrammes per 24 Hours.)	Excretion. Milligrammes per 24 Hours.)
1	100	78	15	—	1500	102	Hypodermic.	30	—
2	100	—	50	—	1500	114	Hypodermic.	40	42
3	100	—	50	126	1500	58	Hypodermic.	60	43
4	100	—	75	33	1500	—	Hypodermic.	75	20
5	150	107	125	85	1500	284	Hypodermic.	100	62
6	150	84	160	56	1500	—	Hypodermic.	125	—
7	175	214	200	84	1500	—	Hypodermic.	175	41
8	200	134	250	—	1500	—	Hypodermic.	200	187
9	200	406	300	114	1500	139	Hypodermic.	200	235
10	200	93	350	150	1500	—	Hupodermic.	200	231
11	200	76	400	164	1500	—	Hypodermic.	200	370
12	200	356	400	151	1500	44	Oral.	1000	407
13	200	134	400	167	1500	122	Oral.	1500	152
14	200	187	—	—	1500	520	Oral.	2000	35
15	200	95	—	—	1500	213	Oral.	2000	82·5
16	—	—	—	—	1500	187	Oral.	2000	159
20	—	—	—	—	—	—	Oral.	3000	116
21	—	—	—	—	—	—	Oral.	3000	297
22	—	—	—	—	—	—	Hypodermic.	125	151
23	—	—	—	—	—	—	Hypodermic.	200	182
24	—	—	—	—	—	—	Hypodermic.	200	340

[1] A patient with acromegaly, who was much benefited in respect of his cardiac failure by oral C6 therapy.

[2] A patient for whom a period of oral treatment was interposed in the course of parenteral therapy. A satisfactory hypotensive effect was obtained from each 100-milligramme hypodermic injection, but none from oral doses up to 1·5 grammes each.

side-effects, such as abdominal distension (most commonly) and dysuria. These symptoms tend to occur also with parenteral therapy though to a lesser extent. Their occurrence emphasizes the point made by Professor M. L. Rosenheim that it is only in those patients in whom the benefit derived from treatment is so obvious as to outweigh its inconveniences that use of hexamethonium is indicated.

It has been reported by Milne and Oleesky that "any of the drug absorbed from an intramuscular depot, and probably from the bowel, is excreted quantitatively in the urine. There seem to be no important destructive agents in the body." It was hoped that as a corollary of this, the urinary excretion might be used as a measure of the effective absorbed fraction of the oral dose. Unfortunately we found that even in cases in which patients received the drug by injection the amounts excreted on successive days varied very greatly. Furthermore, even though in some cases the amount excreted in the urine over a considerable period of time approximated the amount of C6 injected in this time we found in others a considerable discrepancy (see Table III). The method used in estimation of C6 in twenty-four hour specimens of urine was that of Zaimis.

Management of Undesirable Effects.

Although mild hypotension is a frequent complaint it is usually relieved by the patient's lying down. With care in prescription of the dose severe episodes of hypotension do not occur. It is necessary to emphasize again the importance in observing the effect of a given dose that the pressure be measured in the erect posture and at a time calculated to demonstrate its greatest effect. After intravenous C6 therapy on the few occasions when excessive hypotension resulted we have elevated the foot of the bed and massaged the legs. Intravenous injection of "Neo-Synephrine" will produce, should it be necessary, a sudden and complete restoration of blood pressure. We have not had the opportunity of trying *nor*adrenaline. Persistent constipation is a frequent complaint, and in most cases some measures have to be taken to combat it. For most patients liquid paraffin is adequate. If it is not, "Carbachol" in doses of 0·5 to 1·0 milligramme (as tablets) given weekly or twice weekly will usually overcome it. If abdominal distension of severe degree or vomiting should occur C6 should be omitted for at least twenty-four hours. Other undesirable effects are encountered too infrequently to be worth discussing. Bromism is very uncommon with the dosage we now use, although we periodically estimate the serum bromine level as a safeguard.

The omission of occasional doses in anticipation of special activities is condoned.

Comment.

For any form of treatment to be of great benefit it must be practical. Though the régime we have used is theoretically inferior to multiple dose régimes or combined hexamethonium-1-hydrazino-phthalazine therapy (as advocated by Schroeder), in that relief from hypertension is afforded for a fraction of each day only, it has proved itself to be efficacious. Furthermore, even when patients have to take the drug by injection, they seem not to regard its demands as unduly onerous. It involves a minimum of undesirable effects.

In comparison with other forms of treatment of hypertension, it is more efficacious than salt-reduction and thiocyanate therapy. It is more generally applicable than sympathectomy and is in addition most likely to be efficacious in just that group in which sympathectomy is most emphatically contraindicated—those with impairment of renal function. It has been successful in the three cases in our own series of "failed sympathectomy".

However, to be both safe and effective it demands an unusual degree of care on the part of the medical attendant. From its effective use certain discomforting symptoms are inseparable. It cannot be expected to undo irreparable damage, particularly to the kidneys. With these qualifications this form of therapy may be considered highly efficacious.

Summary.

An account is given of the treatment of 45 subjects of severe hypertension with hexamethonium bromide. Nine derived definite and nine less certain benefit from the drug administered orally. Eleven derived no benefit from oral C6 therapy, but were considerably improved by parenteral therapy. Estimation of urinary C6 excretion proved no guide to its absorption.

Acknowledgements.

We wish to express our indebtedness to the Medical Research Council for funds which made possible the performance of the urinary hexamethonium estimations; also to the nursing staff of the professorial medical ward at the Brisbane General Hospital.

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THE MANAGEMENT OF HYPERTENSION WITH HEXAMETHONIUM BROMIDE.

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RENEWED interest in the hypotensive effect of sympatholytic drugs followed the introduction of the methonium compounds by Paton and Zaimis in 1948. Pentamethonium and hexamethonium, being relatively non-toxic and long-lasting in their effects, offered a method for continuous and long-term treatment of hypertension by sympathetic blockade, in a way which had not been possible with earlier compounds such as tetra-ethyl ammonium ions.

The methonium compounds are bisquarternary ammonium salts with the basic formula $(N^+(CH_3)_3.(CH_2)_n.(CH_3)_3N^+)$ (Paton and Zaimis, 1948). The value of "*n*" is five in pentamethonium and six in hexamethonium; hence their alternative names C5 and C6. Both drugs act as ganglionic blocking agents, paralysing all autonomic ganglia both sympathetic and parasympathetic, though not all to an equal extent (Paton, 1951). They prevent acetyl choline from acting on the ganglion cell by competing successfully with it for receptor groups in or on the cell membrane.

The blocking of vasoconstrictor impulses causes a fall in peripheral resistance with consequent lowering of the blood pressure. The vasodilatation may be readily demonstrated by plethysmographic and skin temperature measurements, as first shown by Arnold, Goetz and Rosenheim (1949). Burt and Graham (1950) found that the increase in blood-flow was much greater in the lower than in the upper limbs, probably owing to the initially greater vasoconstrictor tone in the legs (Pickering and Hess, 1933).

Paton (1951) suggests that there may also be a reduction of venous tone leading to venous pooling. The diminished venous return to the right side of the heart would then augment the fall in peripheral arteriolar resistance in bringing about a fall in blood pressure, this effect being most obvious with the subject standing motionless.

The effect of hexamethonium on total blood-flow and blood-flow to various viscera is not yet fully known. Undoubtedly the cardiac output per minute is reduced when the hypotensive effect is severe enough to threaten syncope (Sharpey-Schafer and Howarth, 1949). Tetra-ethyl ammonium bromide was found by Aas and Blegen (1949) to have a specific depressant effect on renal plasma flow, which was independent of blood pressure reduction. Whether hexamethonium has any such effect is not known. Milne and Oleesky (1951) have shown that excretion occurs via the kidneys, almost solely by glomerular filtration (Young, de Wardener and Miles, 1951).

Numerous reports on the use of hexamethonium in the treatment of hypertension have appeared in the last two years. Campbell and Robertson (1950), Turner (1951), Frankel (1951), Murphy (1951) and Freis, Finnerty, Schnaper and Johnson (1952) have all reported successful results, at least in a proportion of cases or in certain groups of hypertensives. The most extensive clinical trials have been carried out by Smirk and his co-workers (Restall and Smirk, 1950; Smirk, 1950, 1951; Smirk and Alstad, 1951; Kilpatrick and Smirk, 1952), who conclude that, apart from some of the subjects with impairment of renal function, almost all hypertensives can have their blood pressure controlled by these drugs.

In contrast to these favourable reports, Locket, Swann and Grieve (1951) were unimpressed with the results in a series of 48 cases, in none of which was the blood pressure lowering effect of the methonium halide significantly greater than that of bed rest. The drugs completely failed to lower blood pressure or maintain it at a low level when therapy was continued after the patient's discharge from hospital. Furthermore, high serum bromide levels and symptoms of bromism were not uncommon.

This difference of opinion prompted the further clinical trials here reported.

Case Material.

The 25 patients in the present series have been treated with hexamethonium bromide for periods varying from three weeks to eighteen months. The patients were selected for treatment solely because of the severity of their hypertension. All patients had hypertensive retinal changes and these were graded according to the classification of Keith, Wagener and Barker (1939). Seven patients had vascular changes only (Grades I and II), six had hæmorrhages and exudates in addition (Grade III), and twelve had papilloedema (Grade IV). For the sake of simplicity those patients with papilloedema have all been classified as having "malignant" hypertension, including those in whom primary renal disease was known to be present.

Management.

All patients, with one exception, were treated in hospital initially, and as far as possible a definite plan was followed in their management. For at least two, usually three, weeks after admission to hospital the patient was kept at rest in bed on routine medical treatment of sedatives and a diet of low salt content. Digitalis and mercurial diuretics were used when indicated. The blood pressure was taken at least once daily and charted. During this initial period a number of investigations were carried out, including radiological examination of the heart, electrocardiography, microscopic examination of urine, blood urea determination and urea clearance and/or urea concentration tests, "Sodium Amytal" sedation test and cold pressor test (Hines and Brown, 1932). The control period was terminated when the blood pressure readings had maintained a steady level over the previous week.

Mode of Administration and Dosage.

The bromide salt of hexamethonium was used in the majority of cases. Recently the bitartrate has been given to a few selected patients. Hexamethonium bromide is a soluble substance dispensed as a tablet containing 250 milligrammes of the salt for oral use and in one millilitre ampoules containing 100 milligrammes for parenteral use. The latter may be injected subcutaneously, intramuscularly or intravenously.

Eleven patients were given the drug by mouth only. To four it was given subcutaneously, for both initial and maintenance treatment, and the remainder received parenteral therapy initially and were converted to oral therapy for maintenance. Before commencement of treatment, test doses were administered to each patient to determine the dose necessary to induce at least a 25% fall in the systolic blood pressure. The test doses were given subcutaneously in the majority of cases (Smirk, 1950). If the patient was in a state of congestive cardiac failure or had had severe restriction of salt intake for any length of time or had a history of bronchial asthma, five to ten milligrammes were injected. In all other patients the dose was 15 to 25 milligrammes. The blood pressure was taken several times before the giving of the injection and every five to ten minutes afterwards for the next hour. For ambulant patients, readings were taken in both the sitting and standing position. Patients confined to bed were propped up by pillows. Note was made of the time after injection and the blood pressure level at which any symptoms occurred, particularly nausea, dizziness or faintness. The maximum fall in blood pressure was found to occur between ten and thirty minutes after administration of the drug. If syncope threatened at any stage the patient was laid flat, the foot of the bed being raised if necessary. If the maximum fall in systolic pressure was unsatisfactory, the same dose, or a part thereof, was repeated at the end of one hour. Rarely a third injection was required.

An alternative method of test dosing was used in recent cases. It was similar to that reported by Freis, Finnerty, Schnaper and Johnson (1952) and was considerably less time-consuming. Hexamethonium bromide was injected intravenously at the rate of two milligrammes per minute until a total of 20 milligrammes had been given. If no significant fall in blood pressure was evident, a further 20 milligrammes were given at the rate of four milligrammes per minute. The rate of administration was then further increased if indicated. The blood pressure was taken at

least once per minute throughout the test; and as soon as a fall in the systolic level was observed, injection was halted for five minutes. This process was continued until the required blood pressure reduction was obtained.

Treatment was then commenced by administration of the "effective" dose by the subcutaneous route or at least five times this dose by the oral route two or three times daily. All patients

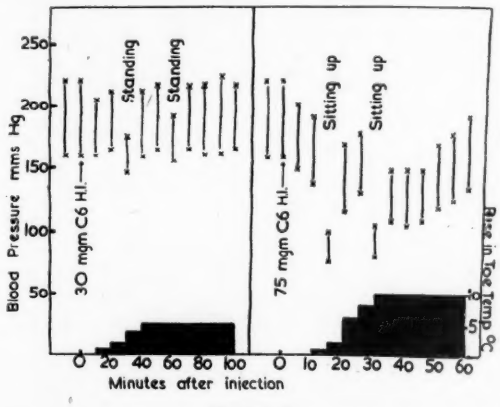

FIGURE I.

The influence of posture after 30-milligramme and 75-milligramme test doses in Case VIII. The patient was supine except where otherwise indicated. After the larger dose there was a significant fall in the supine blood pressure, but sitting up was accompanied by hypotension and faintness. After the small dose the blood pressure fell significantly only when the patient stood up.

rapidly acquire tolerance to the drug, so it is necessary to increase the dose frequently in the initial stages of treatment. In the present series the rate and extent of the increase in dosage were determined entirely by the response of each patient as indicated by the blood pressure readings. The blood pressure was taken at least twice each day. As far as possible one reading was taken at the time of expected maximum effect of a dose (approximately half an hour after a subcutaneous dose and one hour after an oral dose), and the second reading was made just before the next dose was due. In general the dose was increased every one or two days during the first week of treatment, every two or three days during the second week, and thereafter less rapidly.

Once each week during the period of treatment in hospital the blood urea and serum bromide levels were determined. The fundi were examined regularly. In the third week of treatment, the electrocardiogram and X-ray examination of the heart were repeated.

With four exceptions oral dosage was used for maintenance treatment after the patient's discharge from hospital. For patients given subcutaneous therapy initially, oral therapy was substituted during the week before discharge. As out-patients each patient was seen weekly at first and then less frequently. The dose was adjusted as necessary, the object being to achieve the maximum hypotensive effect compatible with reasonable freedom from side effects.

Results.

The results of treatment are tabulated in Table I, where the patients are listed in the order in which they came under treatment. The grading of the results in each case as "good", "fair" or "unsatisfactory" was based on the degree and constancy of blood pressure reduction, symptomatic relief, improvement in the retinæ and relief from complications such as left ventricular failure. The grading in an individual case was sometimes difficult; for example, blood pressure control was not always ideal, but in the same case the results were often good in respect of all other factors considered. In such a case the results were classified as "fair". When treatment was stopped prematurely for reasons not connected with hexamethonium therapy, the result was graded on the short term response. When complications necessitated withdrawal of the drug, or when initial response was good but ultimate results were poor, the grading was "unsatisfactory". Among the early cases in the series there were several in which hexamethonium was not given an adequate trial (Cases II, III, IV, VI). They have been included as they illustrate some of the reasons for failure of treatment.

Of the 12 patients with malignant hypertension, the results were good in four cases, fair in four and unsatisfactory in four. Of six patients with grade III retinitis, good results were obtained in three cases, fair in one and poor in two. The two with unsatisfactory responses (Cases II and XXII) were emotional patients who were probably unsuitable for treatment. Of the remaining seven patients who had grade I or II retinal changes, the results were good in six cases and fair in one. None was unsatisfactory. Thus over the whole series of 25 patients the response was good in 13 cases, fair in six and poor in six, the proportion of good results being least with the "malignant" hypertensive subjects. It should be emphasized that these figures include patients treated when we were inexperienced in the use of the drug, and that it is an unselected series in respect of suitability for treatment except that all were severely hypertensive.

Discussion.

The two most important factors determining success with treatment were found to be the correct adjustment of dosage in each patient and the full use of posture as an adjuvant to drug therapy.

Adjustment of Dosage and Drug Tolerance.

The importance of test dosing each patient before starting treatment has already been emphasized. It determines sensitivity to hexamethonium and is a guide to initial doses. Unfortunately it is of little help in determining subsequent requirements. Smirk (1950) described the development of tolerance, and our experiences fully confirmed his observations. Tolerance was found to increase rapidly for the first two or three weeks of therapy, but at a variable rate and extent in different patients, so compensatory increases in dosage could not be standardized. The timing of blood pressure readings in such a way as to indicate the need for an increase in the size or frequency of the dose has already been mentioned. Figure II shows the

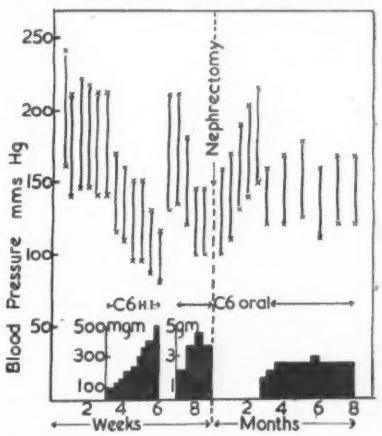

FIGURE II.

The hexamethonium dosage and its effect on the blood pressure in Case VII. The immediate rise following temporary suspension of the drug is evident in the seventh week. The maintenance blood pressure control is not ideal in this case, the daily dose being limited by side effects.

blood pressure chart and hexamethonium dosage in Case VII during the first three weeks of subcutaneous treatment. The development of tolerance followed the same pattern whether the patient was receiving subcutaneous or oral therapy, and the only difference in management was the necessity for more frequent doses when the drug was given subcutaneously because of the shorter duration of effect. An amount of 125 milli-

TABLE I.

Case No.	Age.	Sex.	Diagnosis.	Blood Pressure on Admission. (Millimetres of Mercury.)		Blood Pressure after Bed Rest. (Millimetres of Mercury.)		Minimum Blood Pressure on Hexamethonium. (Millimetres of Mercury.)		Average Maintenance Blood Pressure or *Blood Pressure at End of Treatment.		Duration of Treatment.	Route of Administration.		Maximum Daily Dose.	Maintenance Dose.	Results.
				Systolic.	Diastolic.	Systolic.	Diastolic.	Systolic.	Diastolic.	Systolic.	Diastolic.		Initial.	Maintenance.			
1	42	F.	Malignant hypertension.	270	170	230	130	115	75	120	95	18 months.	Oral.	Oral.	2·5 grammes.	1·25 grammes.	Good.
2	42	F.	(1) Essential hypertension. (2) *Diabetes mellitus*. (3) Cerebral thrombosis.	235	150	210	135	155	95	*210	120	8 weeks.	(1) Oral. (2) Hypodermic.	——	300·0 milligrammes.	——	Unsatisfactory.
3	54	M.	Malignant hypertension.	250	160	250	140	210	130	*210	130	2 weeks.	Oral.	——	3·0 grammes.	——	Unsatisfactory.
4	36	F.	(1) Malignant hypertension. (2) Hypertensive encephalopathy.	255	170	—	—	170	125	*190	125	5 weeks.	Oral.	——	3·5 grammes.	——	Fair.
5	38	M.	(1) Malignant hypertension. (2) Chronic nephritis.	230	140	210	140	120	90	*140	100	1 week.	Hypodermic.	——	105·0 milligrammes.	——	Unsatisfactory.
6	47	M.	Malignant hypertension.	270	160	—	—	160	105	*180	130	3 weeks.	Hypodermic.	——	360·0 milligrammes.	——	Fair.
7	42	M.	(1) Malignant hypertension. (2) Hypoplasia of right kidney. (3) Perinephric abscess. (4) Hypertensive encephalopathy.	240	160	210	140	120	80	160	120	10 months.	Hypodermic.	Oral.	500·0 milligrammes.	3·0 grammes.	Fair.
8	20	M.	Malignant hypertension.	240	150	220	145	115	85	*185	135	2 weeks.	Hypodermic.	——	500·0 milligrammes.	——	Unsatisfactory.
9	55	M.	Essential hypertension.	230	150	210	150	135	100	*150	100	4 weeks.	Oral.	——	4·0 grammes.	——	Good.
10	30	F.	Malignant hypertension.	260	170	230	160	150	110	*240	160	3 months.	Hypodermic.	Oral.	300·0 milligrammes.	2·0 grammes.	Unsatisfactory.
11	50	F.	Malignant hypertension.	250	150	220	140	140	100	160	115	7 months.	Hypodermic.	Oral.	300·0 milligrammes.	3·0 grammes.	Fair.
12	31	F.	(1) Malignant hypertension. (2) Hypertensive encephalopathy.	265	155	—	—	140	90	*140	90	2 weeks.	Hypodermic.	——	60·0 milligrammes.	——	Good.
13	51	F.	(1) Essential hypertension. (2) Mitral stenosis. (3) Auricular fibrillation.	200	110	195	100	120	90	130	90	6 months.	Oral.	Oral.	1·5 grammes.	1·5 grammes.	Good.
14	55	F.	Essential hypertension.	245	140	—	—	100	70	150	100	5 months.	Oral.	Oral.	2·0 grammes.	1·5 grammes.	Good.
15	54	F.	(1) Essential hypertension. (2) Left ventricular failure.	260	150	240	140	170	110	200	100	5 months.	Hypodermic.	Oral.	4·0 grammes.	4·0 grammes.	Fair.
16	61	F.	(1) Essential hypertension. (2) Left ventricular failure.	270	150	230	110	130	80	150	90	5 months.	Oral.	Oral.	4·0 grammes.	3·0 grammes.	Good.
17	47	M.	Essential hypertension.	250	140	190	150	95	80	135	105	4 months.	Oral.	Oral.	4·0 grammes.	3·5 grammes.	Good.
18	58	M.	Essential hypertension.	250	160	230	150	140	70	150	100	4 months.	Oral.	Oral.	4·0 grammes.	3·5 grammes.	Good.
19	34	F.	Essential hypertension.	250	145	—	—	120	90	140	95	4 months.	Oral.	Oral.	4·0 grammes.	4·0 grammes.	Good.
20	38	M.	(1) Essential hypertension. (2) Congestive cardiac failure.	190	160	200	170	140	110	170	120	4 months.	Hypodermic.	Hypodermic.	625·0 milligrammes.	625·0 milligrammes.	Fair.
21	51	M.	Malignant hypertension.	190	130	160	125	90	80	125	90	3 months.	Hypodermic.	Hypodermic.	325·0 milligrammes.	325·0 milligrammes.	Good.
22	45	F.	Essential hypertension.	220	150	220	150	130	100	*210	140	2 weeks.	Hypodermic.	——	350·0 milligrammes.	——	Unsatisfactory.
23	44	F.	Essential hypertension.	240	160	220	145	120	90	140	100	8 weeks.	Oral.	Oral.	2·25 grammes.	1·5 grammes.	Good.
24	36	F.	Essential hypertension.	290	190	240	160	120	100	150	110	5 weeks.	Hypodermic.	Hypodermic.	400·0 milligrammes.	400·0 milligrammes.	Good.
25	35	F.	Malignant hypertension.	280	190	270	170	80	60	140	90	4 weeks.	Hypodermic.	Hypodermic.	300·0 milligrammes.	300·0 milligrammes.	Good.

grammes five times daily was the largest subcutaneous dose given, and one gramme five times daily the greatest oral dose. Daily doses of up to 12 grammes have been reported (Locket, Swan and Grieve, 1951).

Maintenance Therapy.

The fall in blood pressure caused by hexamethonium is temporary; if for any reasons the drug is withheld, the blood pressure quickly rises again (Figure II). Because of this, treatment must be continued after the patient's discharge from hospital. Campbell and Robertson (1950) noted more lasting reduction in some cases after several months of treatment, but in our experience the drug must be taken for an indefinite period. In Case I the patient has been on continuous maintenance therapy for eighteen months, and any reduction of dosage is followed by a rise in blood pressure. The same phenomenon has been observed in other cases up to nine months from commencement of treatment.

The best method of administering the drug for maintenance is a vexed question. Injections are more certainly effective and because of their shorter duration of effect are less likely to be cumulative. Smirk and Freis, Finnerty and Schnaper (1952) advocate subcutaneous maintenance therapy, at least in the majority of cases. The disadvantages of parenteral administration are inconvenience to the patient and, in some cases, wide fluctuations in the blood pressure over the twenty-four hours unless doses are given with irksome frequency. Oral therapy, on the other hand, has neither of these disadvantages, but it does carry the possible risk of irregular absorption and dangerous accumulation. Kilpatrick and Smirk (1952) have summarized the relative indications for subcutaneous and oral dosage for maintenance therapy. In their experience not more than one in four or five hypertensives can be controlled satisfactorily with oral therapy without the development of troublesome side effects. They found oral therapy most likely to be successful in patients requiring only small doses of the drug.

Oral maintenance was used in all but four cases (Cases XX, XXI, XXIV and XXV) in the present series, and on the whole it has proved effective and with the exception of bromism has not been attended by an undue incidenceof complications. The subcutaneous method was considered preferable in Case XX and Case XXI because oral therapy proved unsatisfactory. The general conclusion reached was that parenteral treatment should be continued when resistance to the drug necessitates large doses (for example, more than four grammes per day) or when oral treatment has been shown to be ineffective.

A maintenance regime combining the two routes of administration has been tried in several recent cases not included in the series, a typical scheme being two subcutaneous injections of the bromide salt (at 9 a.m. and 2 p.m.) and two oral doses of the bitartrate salt (at 10 a.m. and 7 p.m.). The results so far are promising and the method is being given further trial.

In the conversion to oral maintenance therapy after initial subcutaneous therapy, 750 to 1000 milligrammes given by mouth were found to be approximately equivalent to 100 milligrammes given subcutaneously. The conversion was effected over several days. Sometimes it was found that the dose required for the fully ambulant out-patient was less than the maximum dose for that patient in hospital. In other patients the reverse was the case. The severity of side effects and the degree of blood pressure reduction tolerated with comfort were factors which sometimes limited maintenance dosage. For example, in Case XIV the patient required less than 1·5 grammes daily to maintain a normal blood pressure, but at this level she had hypotensive symptoms and troublesome side effects. She was more comfortable and had minimal side effects on a dose of one gramme daily with a blood pressure of 140 millimetres of mercury, systolic, and 100 millimetres, diastolic. The majority of patients required at least 2·5 grammes, some 4·0 grammes, but few tolerated more than 3·5 grammes without severe side effects or complications.

The Use of Posture.

If a sufficiently large dose is given, it is possible to lower the blood pressure with hexamethonium bromide with the patient in any posture, but a dose which will cause significant fall in the blood pressure of the supine subject may induce syncope due to hypotension if the patient sits or stands up. This point was illustrated by Case VIII, in which a test dose of 30 milligrammes given subcutaneously had no effect on the blood pressure when the patient was supine. A dose of 75 milligrammes was given on the next day, and subsequent events and blood pressure readings are shown in Figure I. The effect of posture is apparent. This was a large test dose purposely given to illustrate the point, but the principle applies equally well during actual treatment. It was found that the only way to avoid overdosage and still obtain maximum benefit was to forbid the supine posture completely. Any patient not well enough to get out of bed was nursed sitting up, even during sleep. If well enough to get up he was encouraged to sit in a chair for several hours during the day and to walk quietly about the ward as he wished. Failure to realize the importance of this simple precaution was, we believe, at least part of the reason for lack of success in some of the early cases. Later in the series the rationale of the use of posture was explained to all patients, and their cooperation made the adjustment of dosage and the avoidance of unnecessary fluctuation in blood pressure a much simpler matter.

Hypotensive Episodes

Despite all precautions, episodes of excessive fall in blood pressure accompanied by nausea, weakness, faintness and occasionally loss of consciousness occurred in some patients, especially during the early stages of treatment when the dose was being increased rapidly. This was commonest in patients having subcutaneous therapy within one hour after an injection, but also occurred with oral therapy. The incidence was diminished by warning the patients of the possible occurrence of the attacks and explaining their mechanism. Once dosage was established on a maintenance level severe hypotension was infrequent, unless some other circumstance was present to increase sensitivity to the drug, such as prolonged standing on a hot summer day, a febrile "cold" or a gastro-enteric infection. One millilitre of 0·25% "Neosynephrin" solution is an effective antidote to hypotension which does not respond to laying the patient flat with the foot of the bed raised. However, its use is rarely indicated.

Side Effects and Toxicity.

Hexamethonium blocks parasympathetic ganglia as well as sympathetic. The parasympathetic paralysis is responsible for the side effects which invariably accompany adequate dosage. Blurring of vision, dryness of the mouth and constipation occur in practically every case. Mild anorexia and postprandial discomfort are not uncommon and presumably result from decreased gastric motility and hypochlorhydria (Kay and Smith, 1950). Increase of the time taken to empty the bladder occurs quite frequently. Two male patients complained of diminished potency while taking large doses.

The side effects were most obvious during the initial weeks of treatment, but in most cases they persisted to some extent during maintenance therapy and often prevented an increase in dosage.

The logical method of preventing or diminishing side effects would be the regular administration of a parasympathomimetic drug free from sympathetic stimulant effects. "Mecholyl" (acetyl-β-methyl choline) has been found satisfactory for this purpose (Freis, Finnerty, Schnaper and Johnson, 1952) and has the added advantage of a vasodilator action. Unfortunately it has not been available, and the use of other drugs, such as neostigmine, is at present being investigated.

Simple measures to counteract the side effects may be quite adequate. Corrective lenses to compensate for the loss of accommodation (Smirk, 1950) were recommended in three cases. Constipation was usually relieved by the use of paraffin oil, saline or anthracene purgatives, but if it persisted for three days or more, temporary suspension of hexamethonium therapy was considered indicated.

Complications occurring in the course of treatment included a mouth infection in Cases X and XVI, and an attack of gastro-enteritis with anorexia, vomiting and diarrhœa in Cases II, XV and XIX. It is possible that the suppression of normal salivary and gastro-intestinal secretion may increase susceptibility to alimentary tract infections.

Complete constipation for three days with distension and discomfort occurred in Cases VII and VIII. Temporary suspension of treatment was sufficient to relieve it. Paralytic ileus has been reported by Campbell and Robertson (1950), Freis (1951) and Bourne and Hosford (1951).

Retention of urine responding to "Prostigmin" therapy occurred in Case XVIII.

More serious complications were not encountered in the present series but have been reported. These include two cases of hemiplegia and one of sudden death assumed to be from coronary thrombosis (Locket, Swan and Grieve, 1951), one case of cerebral thrombosis occurring during treatment (Cropper, 1951), and two deaths, one from cerebral thrombosis and one from intercurrent infection (Murphy, 1951).

Bromism.

As one 250 milligramme tablet of hexamethonium bromide contains 110 milligrammes of bromide ion (44%) the daily intake of bromide is considerable, for example, 1·76 grammes or 26·4 grains of the ion daily from a maintenance dose of 4·0 grammes. When this is given over a long period, particularly if combined with a diet of low salt content or in the presence of renal insufficiency, the cumulative effects may be sufficient to cause symptoms of bromide intoxication. This has been reported by Locket, Swann and Grieve (1951), Rosenheim (1951), Holt and Litchfield (1951), and Murphy (1951). Locket found serum bromide levels up to 100 milligrammes *per centum*.

In the present series sleepiness was observed in nearly all cases. With subcutaneous therapy in hospital serum bromide contents were never more than " a trace ". With oral treatment, however, bromism has been observed with some frequency. The level of serum bromide (estimated as potassium bromide) at which symptoms became evident was extremely variable (Goodman and Gillman, 1941). For example, in Case II the patient was drowsy and disorientated with a serum bromide content of 35 milligrammes *per centum*, whereas in Case XVII the patient had no symptoms but was found to have 154 milligrammes *per centum* of bromide in the serum. The severest intoxications encountered were in Cases XV and XVI. Both occurred after several months of administration of a daily dose of 4·0 grammes by mouth. The extreme drowsiness, mental confusion and disorientation due to the bromism combined with the dry mouth, coated tongue, anorexia, constipation, and weakness following accumulated overdosage of hexamethonium made a striking clinical picture. Both patients had been keeping meticulously to a diet of low salt content for some months previously. They improved rapidly with cessation of the drug and the administration of salt and copious fluids by mouth.

When bromide susceptibility is evident it is obviously preferable to substitute one of the other salts of hexamethonium when these are available. The bitartrate was subsequently used successfully in the two cases mentioned above. Alternatively, parenteral therapy may be used, as the bromide intake is much less and intoxication less frequent.

Effect on Renal Function.

Theoretically, hexamethonium could adversely affect renal function and diminish renal blood-flow, either through the generalized blood pressure reduction or by some specific depressant action on the renal plasma flow and glomerular filtration rate. The latter was found by Aas and Blegen (1949) to follow administration of tetra-ethyl ammonium bromide. In practice, however, most patients with already impaired renal function, as shown by the ordinary renal function tests, seem to tolerate hexamethonium without further deterioration in kidney function. Smirk (1951) cites four such cases with a raised blood urea content. Many of the patients in the present series had abnormal urea clearance and concentration test findings, and some had a blood urea content of between 40 and 50 milligrammes *per centum* before treatment. Subsequent blood urea estimations during treatment showed a random variation, some showing a temporary rise of 10 units, others falling to within normal limits. Albuminuria diminished in Case X. In this group, therefore, no deterioration of renal function was shown, and in some patients improvement could be claimed. Four patients with an initial blood urea content of more than 70 milligrammes *per centum* were given hexamethonium. All had malignant retinal changes. In Case V, the renal excretory capacity definitely diminished during the one week of treatment, the urinary output showing a fall and the blood urea content rising from 80 to 120 milligrammes *per centum*. Both returned to pre-treatment levels when the drug was suspended. In Case XXI, the patient had gross retinitis, but only moderately severe hypertension, and the response to treatment was more favourable, the blood urea level falling from 76 to 58 milligrammes *per centum* after three weeks. This patient has continued maintenance therapy.

In Case XXV the patient was admitted to hospital in a stuporose condition with gross grade IV retinitis. The response of the blood pressure, the blood urea content and the degree of albuminuria are shown in Figure III. There was an initial rise

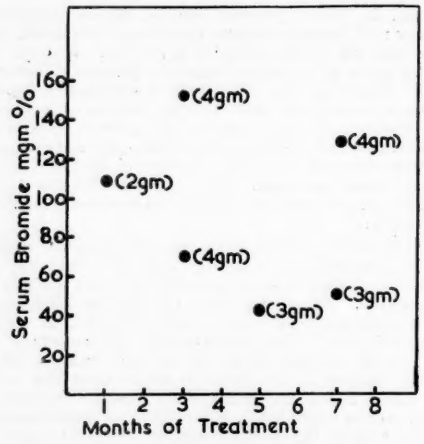

FIGURE III.

Showing the serum bromide content (estimated as potassium bromide) in six cases after various periods on oral therapy.

in the blood urea content, but treatment was continued because of the striking clinical improvement and blood pressure reduction, and after three weeks the blood urea content fell to the pre-treatment level. Four weeks after the commencement of treatment the patient was ambulant and feeling well, the papillœdema had diminished, and no fresh hæmorrhage or exudates had appeared. However, the ultimate effect of treatment in the presence of the severe renal damage remains to be seen.

The fourth patient, who was seen before this series was commenced and is therefore not included in the 24 cases, was a girl, aged fifteen years, with a ten years history of pyelonephritis. She was in a state of uræmic coma with a blood urea content of 200 milligrammes *per centum* when two injections of 15 milligrammes of hexamethonium were given. The blood pressure fell precipitously to normal levels and did not rise again. The blood urea content rose rapidly, and she died three days later. The patient was *in extremis* when the drug was given as a desperate measure, and it did not alter the ultimate prognosis, but it certainly had no favourable effect.

Concerning the use of hexamethonium for patients who show evidence of impaired renal function, therefore, there seems to be no danger when the blood urea content is less than 70 milligrammes *per centum*, and in fact improvement may follow treatment. In the presence of blood urea levels higher than this, however, caution is obviously necessary, and renal excretory function should be carefully observed. In cases of uræmia hexamethonium is contraindicated.

Clinical Improvement and Symptomatic Relief.

One of the most gratifying effects of hexamethonium is the symptomatic relief it affords the majority of patients. This was found to be particularly true of occipital headache, the commonest complaint. Giddiness and the vaguer symptoms of irritability, impairment of concentration and memory were also lessened.

Diminution of visual acuity when accompanying retinitis was alleviated as the retinitis regressed. Table II shows the effects of hexamethonium therapy on the retinal changes in a number of the cases. Although periodic improvement in hypertensive retinitis is known to occur spontaneously without treatment (for example, in Case XV the patient had had papillœdema on a previous admission to hospital in 1950, but this was not present on her admission in December, 1951), the constant improvement noted in the present series seemed more than could be accounted for on the grounds of spontaneous remission. Kilpatrick and Smirk (1952) mention similar

improvement. Papilloedema recurred in Case X after ten weeks of therapy, when oral maintenance therapy was no longer controlling the blood pressure. This was the only case in which retinitis advanced after initial alleviation.

TABLE II.
Changes in the Grade of Retinopathy Following Treatment with Hexamethonium.[1]

Case Number.	Grade of Retinopathy.	
	Before Treatment.	After Treatment.
1	IV	II
2	III	II
7	IV	II
8	IV	II
9	III	II
10	IV	II (Later reverted to IV).
11	IV	II
13	II	I
14	II	I
16	II	I
19	III	II
21	IV (Gross changes)	IV (Papilloedema much less severe.)
25	IV (Gross changes.)	IV (Papilloedema diminishing.)

[1] Only those cases are included in which a definite change was noted. The classification followed was that of Kieth, Wagener and Barker: Grade I = mild vascular changes. Grade II = more severe vascular changes. Grade III = vascular changes with hæmorrhages and exudates in addition. Grade IV = papilloedema present.

Evidence of left ventricular stress, including effort dyspnœa, left ventricular enlargement, pre-systolic gallop rhythm and a left ventricular strain pattern in the electrocardiogram, was present in the majority of cases before treatment. Four patients gave a history of paroxysmal nocturnal dyspnœa. In Cases XIII and XX the patients were in a state of congestive failure on admission to hospital. All improved with treatment. Bed rest and digitalis undoubtedly contributed to this, but the beneficial effect of the reduction in blood pressure *per se* was shown in several patients who had been digitalized for some time previously without significant relief. Improvement in cardiac reserve was also evident in others who were not given digitalis at any stage. Electrocardiographic evidence of the diminished strain on the left ventricle was found quite commonly after some weeks of treatment (Figure V).

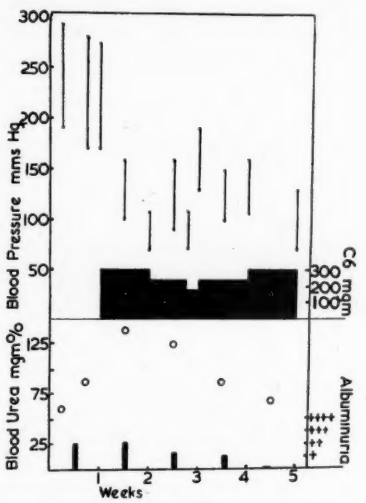

FIGURE IV.
Showing the effect of hexamethonium (given subcutaneously) on the blood pressure, blood urea content and degree of albuminuria in Case XXV.

Only one patient with hypertensive encephalopathy was treated with hexamethonium in the acute stage (Case XII). The response was good.

Selection of Cases.

The patients in the present series were selected for hexamethonium treatment solely because of the severity of their hypertension. As more experience is gained with the drug, it should be possible to pre-select those patients likely to benefit and to discard unsuitable patients before embarking on a long course of treatment arduous for both patient and physician. Factors which would have to be considered include the age and personality of the patient, the severity and ætiology of the hypertension, the severity of the symptoms and the complications, and the sensitivity to a test dose of the drug.

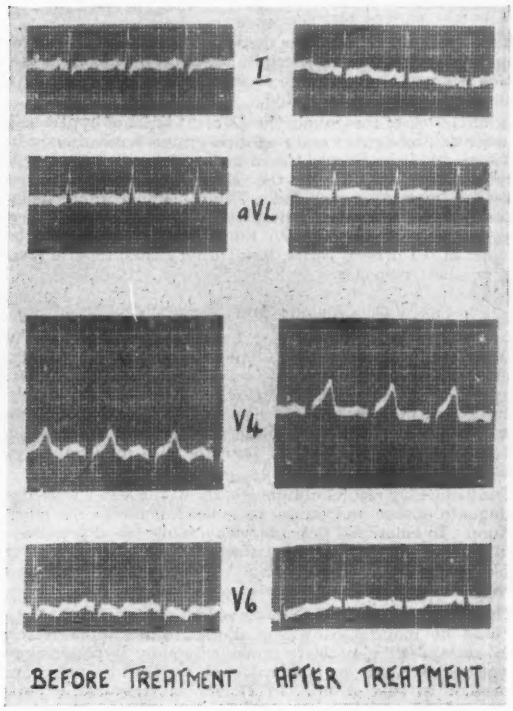

FIGURE V.
Electrocardiograms in Case VII before and after hexamethonium therapy. Improvement is evident. Only Leads 1, AVL, V4 and V6 are shown.

In the older patient, sixty years or over, the wisdom of reducing the blood pressure to any great extent is questionable. Organic vascular changes are certain to be present, and the danger of cerebral or coronary thrombosis would be greater in this group. The oldest patient in the present series is aged sixty-two years (Case XVI), and she has improved remarkably with hexamethonium therapy, but she could not tolerate the reduction of her blood pressure to normal levels. She is at present being maintained at a blood pressure level of approximately 150 millimetres of mercury, systolic, and 90 millimetres, diastolic. Similar age limitations have been discussed by Smirk (1950).

In the young patient with mild essential or nephritic hypertension, but without malignant changes, the question of "prophylactic" use of the drug arises. The value of prolonged therapy in such cases would not be known for many years, but especially when there is a bad family history it may be worth considering.

The personality of the patient and its effect on the response to hexamethonium were mentioned recently by Murphy (1951) and confirm our own experiences. The drug perhaps mitigates, but certainly does not prevent, the rise in blood pressure in response to emotion in a hypertensive patient. It follows that the excitable unstable patient will have a less satisfactory response to treatment. For example in Cases II and XXII it was considered useless to continue treatment for this reason. In Case XIV the combined use of phenobarbitone sedation and hexamethonium was successful when sedation alone had previously failed.

The patient with severe hypertension or with malignant changes is eminently suitable for treatment unless some contra-indication is present, for example, a very high blood urea level. Whether "medical" or "surgical" sympathectomy offers a better prognosis in these cases cannot be answered at present. Neither cures the cause of the hypertension. Each is a physiological palliative. The medical method of methonium therapy appeals as a less drastic measure. It has the definite advantage that it can be used when complications contraindicate surgical treatment. Surgery had been considered and rejected in many cases in the present series.

In the presence of a milder degree of hypertension, but with symptoms such as severe occipital headache or complications such as left ventricular failure or severe retinal changes, the use of hexamethonium is indicated.

As for the use of the drug in the different types of hypertension, the essential, malignant and nephritic groups have already been discussed, and it is assumed that organic causes such as pheochromocytoma, coarctation of the aorta and congenital renal anomalies have been excluded. The remaining group includes the subjects of transient hypertension, such as those suffering from toxæmia of pregnancy. Such patients have not been included in the present series, but Turner (1950) reports favourably on their response.

Conclusions and Summary.

Twenty-five patients suffering from hypertension have been treated with hexamethonium bromide for periods up to eighteen months. The selection of cases was purposely indiscriminate except for the necessary qualification of severe hypertension. Relief from symptoms and significant reduction of blood pressure were obtained in a majority of patients with essential hypertension and in approximately 50% of patients with malignant hypertension.

Unsatisfactory results obtained early in the series were due to inadequate dosage and failure to make full use of the effect of posture. In emotional patients with a labile blood pressure, the results were found to be less satisfactory than in those with more stable personality. The combined use of phenobarbitone and hexamethonium was found useful in this group.

The extent of the blood pressure reduction varied. Sometimes it could be maintained within normal limits on a relatively small dose. Other patients remained mildly hypertensive but symptom-free, and it is considered worthwhile to continue treatment in this group. In elderly arteriosclerotic patients it is probably inadvisable to reduce the blood pressure too rapidly or too drastically because of possible thrombotic complications.

The subcutaneous route was found to be more rapidly and more certainly effective during the initial stabilization period in hospital. It is certainly the method of choice in an emergency such as hypertensive encephalopathy. However, a number of patients were successfully treated when given the drug by mouth from the beginning. Oral therapy seems adequate for maintenance dosage in the majority of cases, and with four exceptions was used throughout the present series. In severe or resistant cases, however, the continuation of subcutaneous injections is considered advisable. Recently a combination of the bromide salt given subcutaneously and the bitartrate salt given orally has been used successfully.

Side effects due to parasympathetic block are a necessary accompaniment of adequate dosage. They tend to be most severe in the first weeks of treatment and occasionally necessitate temporary suspension of therapy. For the most part they respond to simple measures. The commonest toxic effect is bromism, and sleepiness due to this frequently occurs. The use of the bitartrate salt avoids this complication in those susceptible to the bromide ion. A salt-free diet increases the tendency to bromism and also enhances sensitivity to hexamethonium. Complications such as paralytic ileus and retention of urine may occur. They threatened in several cases in this series, but were prevented by temporary cessation of treatment. Impairment of renal function does not seem to contraindicate the use of hexamethonium, but caution is necessary in the presence of a raised blood urea content. Toxic effects occurred with equal frequency when the drug was given by mouth or subcutaneously, with the exception of bromism, which was more common with oral therapy.

No fatalities were encountered.

It is stressed that safe and successful treatment with the drug requires constant supervision, particularly in the first weeks. Retention in hospital during this period is advisable. The commencing dose must be determined individually for each patient by test dosing either by the subcutaneous or by the intravenous method. As tolerance develops the dose should be adequately increased. Any set dosage scheme is likely to result in completely ineffective treatment on the one hand or potentially dangerous hypotensive episodes on the other. Maximum use should be made of the potentiating effect of the upright posture throughout treatment.

Acknowledgements.

An investigation of this nature could not have been carried out without the cooperation and assistance of many people. My grateful thanks are due to Dr. Kempson Maddox, director of the Hallstrom Institute of Cardiology, to Dr. John Halliday, assistant director, and to all members of the honorary medical staff of the Royal Prince Alfred Hospital and the Rachel Forster Hospital who permitted me access to patients under their care. Invaluable assistance was given in the early period of the work by Dr. R. de Monchaux and in the latter part by Dr. J. F. Farrar, both as registrars in the Hallstrom Institute of Cardiology. Finally I wish to thank the resident medical officers of both hospitals for their willing help in taking the numerous blood pressure readings.

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FAMILIAL CARDIAC ENLARGEMENT: REPORT OF TWO CASES.

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RECENTLY Evans (1949) has focused attention on familial cardiac enlargement in a paper describing three cases in one family, and two in another, in which none of the known causes of cardiac enlargement were present. In view of the interest in this condition the following history of two patients in one family with obscure cardiac enlargement is presented. Both patients are still living.

On June 9, 1950, J.S. and his sister were admitted to the Alfred Hospital for cardiac investigation.

J.S., a male, aged thirty-four years, has been known to suffer from heart disease since 1935. Fifteen years ago, whilst lifting a heavy weight, he noticed his heart "give a run of fast beats" lasting a few minutes. This recurred at intervals during the next few days. Examination at this time showed his blood pressure to be 120 millimetres of mercury, systolic, and 80 millimetres, diastolic, and his apex beat five and a quarter inches from the mid-line. The heart sounds were clear, there were no bruits, the rhythm was regular and the electrocardiogram (Figure I) showed no abnormality apart from auricular extra-

FIGURE I.
Electrocardiogram of J.S. Lead II (1935) showing auricular extrasystoles.

systoles. During the next ten years episodes of tachycardia, always precipitated by exercise, frequently occurred. The heart rate in these attacks was usually in the region of 150 beats per minute, and the attacks started and ceased abruptly. Because of the attacks he rested nearly all the time and frequently spent periods of several weeks in bed. When he was examined six years ago his blood pressure was 180 millimetres of mercury, systolic, and 80 millimetres, diastolic, and *pulsus alternans* was observed. Fluoroscopy showed enlargement of the left ventricle and pulmonary conus. No bruits were heard. An electrocardiogram (Figure II) taken during a period of tachycardia with a rate of 170 per minute indicated that the tachycardia was either auricular or nodal in origin, and several ventricular and nodal extrasystoles were recorded.

During the last six years there has been little alteration in the patient's symptoms. He has, however, rested even more and seldom left his house in the past three years. He has never complained of dyspnœa, but exercise has been limited by the occurrence of tachycardia. At times bradycardia with a rate of 40 per minute has been observed, both by the patient and by his medical adviser.

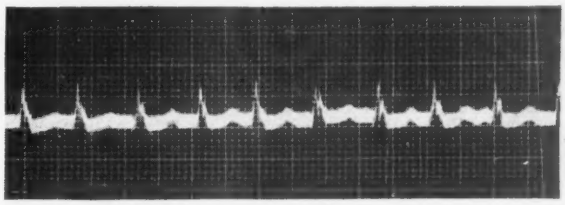

FIGURE II.
Electrocardiogram of J.S. Lead II (1944) showing tachycardia of auricular or nodal origin.

Examination of the patient on this admission to hospital revealed a healthy looking man. There was an obvious venous reflux in the neck, the cervical veins being filled to six centimetres above the clavicles. No thyroid enlargement was detected. His blood pressure was 156 millimetres of mercury, systolic, and 56 millimetres, diastolic. His heart was enlarged, its apex beat being five and a half inches from the mid-line in the sixth left intercostal space; the heart sounds were regular with a harsh systolic murmur present over the whole precordium but loudest

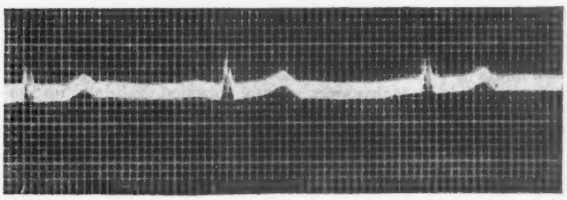

FIGURE III.
Electrocardiogram of J.S. Lead II (1950) showing nodal rhythm.

in the third intercostal space to the left of the sternum. An early, rather faint, high-pitched diastolic murmur was also audible just inside the apex. The liver edge was palpable two centimetres below the right costal margin, but was not tender. No peripheral œdema was present.

Fluoroscopy confirmed the pronounced cardiac enlargement, involving both ventricles, particularly the left (Figure VII).

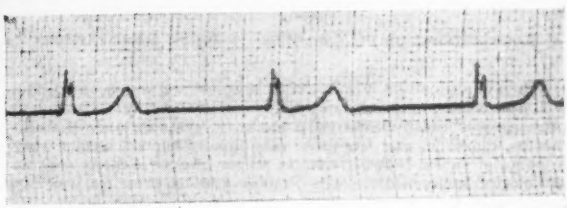

FIGURE IV.
Electrocardiogram of J.S. Lead II (1950) showing nodal rhythm

The aorta was left-sided and hypoplastic, and the pulmonary conus and artery were prominent. No hilar dance was seen. The standard limb and five chest lead electrocardiogram (Figures III and IV) strongly suggested nodal rhythm, and this was confirmed with an œsophageal electrode (Figure V). Phonocardiograms confirmed the presence of both systolic and diastolic murmurs. The arm-to-tongue circulation time measured with "Decholin" was twenty-one seconds, the normal range being

fourteen to nineteen seconds. Blood examination showed a hæmoglobin value of 13·8 grammes per 100 millilitres, and the red cells numbered 4,500,000 per cubic millimetre.

The large pulse pressure, for which no obvious cause was found, suggested a peripheral arterio-venous shunt. However, skiagrams of the skeleton showed no bone changes, and detailed auscultation of the skull and limbs revealed no murmur.

During his six weeks' stay in hospital his pulse rate did not rise above 96 per minute. Frequent periods of bradycardia occurred when the rate was in the region of 44 per minute, and the heart rate could also be slowed to these levels by carotid pressure.

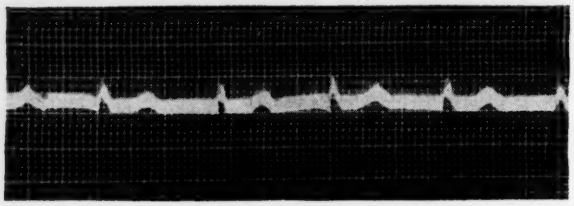

FIGURE V.

Electrocardiogram of J.S. Œsophageal lead (1950) showing nodal rhythm.

It is of interest that during one period of bradycardia, lasting four days, fluid and electrolyte balance studies showed considerable water and salt retention.

M.S., aged thirty-six years, first complained eight years ago of attacks of palpitation due to tachycardia, in which the rate would be in the region of 150 per minute and which lasted from two hours up to five weeks. These attacks were precipitated by exertion, and the tachycardia usually subsided gradually on the patient's resting in bed. Between the attacks her pulse rate often fell to 40 per minute as noted by herself and her medical adviser. Her exercise tolerance during the last eight years has been limited more by the threat of palpitation than by dyspnœa, and she has been able to do light housework and shopping during this time.

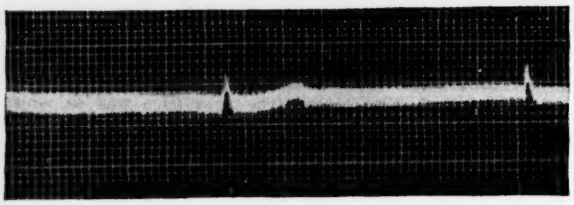

FIGURE VI.

Electrocardiogram of M.S. (1950) showing nodal rhythm.

When examined on admission to hospital she was seen to be a well nourished woman and not distressed in any way. Her blood pressure was 164 millimetres of mercury, systolic, and 64 millimetres, diastolic, and the pulse rate during her six weeks' stay in hospital varied between 60 and 36 per minute; there were no attacks of tachycardia. The jugular venous pressure was not raised and the thyroid gland not palpable. Her heart was enlarged, its apex beat being five and a half inches from the mid-line and in the fifth left intercostal space. A harsh systolic murmur was heard over the whole precordium, being maximal in the second left intercostal space near the sternal margin. The liver was not palpable, and there was no peripheral œdema.

Fluoroscopy showed enlargement of both right and left ventricles, the left being enlarged to a greater degree (Figure VIII). The pulmonary artery shadow was prominent. Electrocardiograms (Figure VI) demonstrated the presence of nodal rhythm, but no other abnormality was present. Phonocardiograms confirmed the presence of a systolic murmur, maximal at the pulmonary area, but no murmur in diastole was detected.

As in the case of her brother, an unexplained high pulse pressure indicated the possibility of a peripheral arterio-venous shunt, but no murmur could be heard on auscultation of the limbs, and skiagrams of the long bones showed no changes.

Two weeks after admission to hospital she suffered an almost complete left-sided hemiplegia, which came on over the course of a few hours. As the cerebro-spinal fluid showed no changes and the onset was not sudden, a cerebral thrombosis was regarded as the most likely cause. In view of the unexplained raised pulse pressure, the possibility of a right-sided intracranial arterio-venous shunt was considered and appropriate investigation planned. Skiagrams of the skull showed some resorption

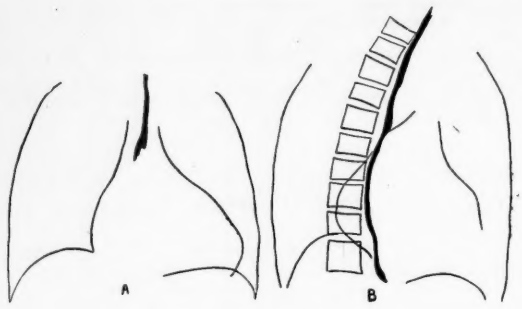

FIGURE VII.

Tracings of postero-anterior (A) and right oblique (B) skiagrams of J.S., showing pronounced cardiac enlargement involving both ventricles, hypoplasia of the aorta and prominent pulmonary conus and artery.

of bone in the right parietal region, but neither with a phonocardiograph nor by auscultation could a murmur be detected over this area. An attempt to obtain a cerebral angiogram had to be abandoned owing to difficulty in introducing a needle into the right carotid artery. During the next four weeks, with rest and aided by physiotherapy, there was a considerable decrease in her paresis, and when discharged from hospital she was able to walk with the aid of a stick.

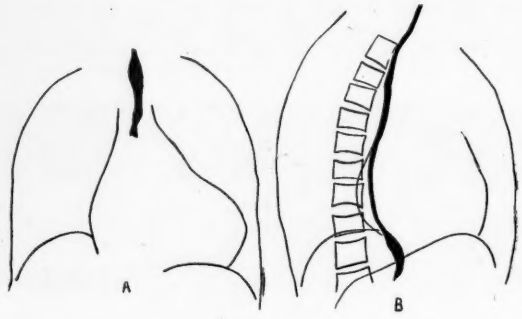

FIGURE VIII.

Tracings of postero-anterior (A) and right oblique (B) skiagrams of M.S., showing enlargement of both ventricles and prominent pulmonary artery.

Discussion.

These two cases of heart disease in brother and sister present many similar features. For fifteen years in the former case and eight years in the latter, they have suffered from a cardiac disability consisting of periods of tachycardia alternating with periods of bradycardia of nodal origin. Congestive cardiac failure has never occurred. The skiagrams of both hearts are similar, in that they show enlargement of both ventricles, predominantly the left, and a prominent pulmonary artery and conus. The pulse pressure in each case is increased. Apart from demonstrating the nodal rhythm the electrocardiogram shows no significant changes.

All the common causes of heart disease can be excluded with reasonable certainty. There is no history of rheumatic fever or joint pains, and signs of mitral stenosis and aortic incompetence are absent. Arterial hypertension is not a factor, as the highest recorded systolic blood pressure over a period of two years was 114 millimetres of mercury in the sister and 156 millimetres in the brother. No supporting evidence of coronary arterial disease is forthcoming; there has been no history of anginal pain, and electrocardiograms show no alteration of the *T* waves or displacement of the *S-T* segments.

The cases do not appear to fit with any well recognized form of congenital heart disease. Patent *ductus arteriosus* is a possibility, but the characteristic murmur is lacking, the left ventricular enlargement predominates, and no pulmonary congestion is present.

Some unlikely possibilities remain which cannot be definitely excluded, for example, Von Gierke's disease. This is extremely rare in adults and could be determined only by post-mortem examination. The unexplained raised pulse pressure suggests a peripheral arterio-venous shunt. However, no trace of a murmur over the limbs could be heard, and skiagrams of the long bones show no evidence of Paget's disease or localized condition associated with an arterio-venous communication.

This then is a form of cardiomegaly not due to the recognized causes. The similarity of certain unusual features in the two cases, the bradycardia with attacks of nodal tachycardia, the shape of the heart and the electrocardiographic findings, occurring in brother and sister, suggests a genetic basis. This is speculative, but in view of the interest in the condition "familial cardiomegaly" described by Evans these cases were considered worthy of reporting, especially as they contain features not recorded by that writer and may belong to an as yet unrecognized syndrome.

Summary.

1. Two cases of cardiomegaly of obscure origin occurring in a brother and sister are described.

2. Although they do not fulfil the criteria of the entity "familial cardiomegaly" recently reported by Evans, they are considered worthy of record because of the rarity of this condition and the remarkable similarity of their symptoms.

3. The features common to both were (*a*) cardiomegaly with similar skiagrams, (*b*) periods of nodal tachycardia alternating with bradycardia, (*c*) similar electrocardiographic patterns, and (*d*) raised pulse pressure.

Acknowledgements.

I wish to thank Dr. M. D. Silberberg for kind permission to publish these cases, and for the patients' early case notes and electrocardiograms. My thanks are also due to Dr. T. E. Lowe for his helpful advice and criticism.

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ACUTE METHYL ALCOHOL POISONING.

By A. T. PEARSON,
Perth.

SHORTAGES in recent years have led to many strange results, and recently in Western Australia the shortage of methylated spirits has led to the use of methanol or "wood spirit" by those unfortunates addicted to drinking methylated spirits. Seven deaths from acute methyl alcohol poisoning occurred in March and April, 1952. Six of these occurred in the Perth Police District and are described in this paper; the seventh occurred in the country.

To the best of my knowledge THE MEDICAL JOURNAL OF AUSTRALIA does not contain a single report of acute methyl alcohol poisoning. Colebatch (1946) reported eight cases occurring in soldiers in Balikpapan, and this appears to be the only Australian report.

The drinking of methylated spirits is a fairly common practice amongst the derelict type, who mix it with cheap wine or soft drink. Since there is only 0·25% methyl alcohol in methylated spirits, the chances of the production of acute methyl alcohol poisoning are not great. The Criminal Investigation Branch of the Western Australian Police Force have records of many people who have been addicted to methylated spirits for years with little effect on their health.

Owing to shipping and other hold-ups, methylated spirits has been unobtainable in this State for some months, and local stores have been selling "methylated wood spirit" or methanol, which contains approximately 75% methyl alcohol. Undoubtedly the six deaths reported in this paper were due to drinking the "wood spirit", under the victims' mistaken idea that it was the same as their old beverage.

Toxicology.

Methyl alcohol is a very toxic substance when taken internally; the lethal dose has been stated by Cecil (1943) to be from 100 to 250 millilitres. The amounts taken in the cases recorded in this paper are not known, since all the subjects were found dead.

The fate of methanol in the body is stated to be an incomplete oxidation to formaldehyde and formic acid —both toxic substances. Unlike ethyl alcohol, it is not rapidly eliminated from the body, and a cumulative effect is common. At least one-third of the methyl alcohol is present in the body after two days.

Keeney and Mellinkoff have stated that methyl alcohol produces poisoning in two ways: (i) there are direct destruction and irritation of tissues; (ii) acid-base balance is disturbed by the oxidation products. Since methyl alcohol mixes with water in all proportions and has a low solvent power for fats, it causes most damage to the aqueous and vitreous of the eye and to unmedullated nervous tissue.

Clinical Material.

Of the six subjects who came to autopsy, four created considerable interest, since all were found dead together. At a small village called Boya, some twenty miles from Perth, four pensioners, two male and two female, were found dead in their huts. They were all confirmed alcoholics, and together in their time had amassed 205 convictions, mostly for drunkenness. In one hut a drinking mug was found containing a small amount of methyl alcohol. Apparently all had died peacefully, there being no evidence of fits or vomiting.

The fifth case was that of a male, aged fifty-three years, who had recently been discharged from an inebriate's home, and on the evening prior to his death drank most of the contents of a bottle of methylated wood spirit. He went blind before death and died in his sleep.

The sixth case was that of a male, aged fifty years, who was found dead in the bush. No history of his movements just prior to his death were obtained.

Autopsy Findings.

The autopsy findings were as follows.

CASE I.—The subject was a female, aged sixty years. The brain was congested and œdematous. Dark fluid blood was found in the heart, which weighed seven ounces and was normal. The lungs were dark blue, congested and wet. There was greenish-brown fluid in the stomach. Acute venous congestion of the liver was present.

CASE II.—The subject was a male, aged sixty-three years. The brain was congested and wet. Brown spots were present on the *dura mater*. The heart weighed 10 ounces and was normal, and dark fluid blood was present in the chambers. The lungs were dark, congested and wet. Acute venous congestion of the liver was present, and there was greenish-brown fluid in the stomach.

CASE III.—The subject was a female, aged sixty years. A bright pink flush of the skin of the buttocks was noted. The heart weighed 14 ounces and appeared normal. There was dark fluid blood in the chambers. The lungs were dark, congested and wet. There was acute venous congestion of

the liver. The stomach contained greenish-brown fluid and undigested food.

CASE IV.—The subject was a male, aged sixty-seven years. A bright pink flush of the skin of the buttocks was present. The heart weighed 17 ounces and coronary atheroma was present. Dark fluid blood was found in the chambers. The lungs were dark, congested and wet. Acute venous congestion of the liver was present. There was greenish-brown fluid in the stomach.

CASE V.—The subject was a male, aged fifty-three years. The face was cyanosed and the pupils were dilated. The brain wase normal but wet. Petechial hæmorrhages were present on the surface of the heart. Dark fluid blood was present in the chambers. The lungs were almost black, heavy and wet. The airways were clear. Acute venous congestion of the liver was present, and there was undigested food in the stomach.

CASE VI.—The subject was a male, aged fifty years. Dusky red post-mortem staining was present. The brain was congested and wet, the heart was normal. Petechial hæmorrhages were present on the surface of the left lung. Both lungs were almost black, heavy and wet. The stomach was empty.

Although acute venous congestion was noted in all cases, with dark fluid blood in the heart and dark congested wet lungs, none of the findings indicated anything more than acute respiratory failure. In three cases the post-mortem staining was bright pink or red, but this did not appear in the other three cases.

Blood Analysis.

Although the autopsy appearances gave little indication of the cause of death, in each case the blood analyses were diagnostic. In all cases samples of blood and when possible samples of urine were sent to the Government Chemical Laboratories for estimation of methyl alcohol content. In Cases I to IV methyl alcohol was suspected, since the subjects were all found together and their past records were well known. In Case V the subject was reported as having drunk methylated wood spirit. Case VI was suspected as being one of death due to acute ethyl alcohol poisoning, and the blood was reexamined after Cases I to IV had been investigated, chiefly because of the red colour of the skin.

The results of the analyses are given in Table I.

TABLE I.

Case Number.	Concentration. (Milligrammes per 100 Millilitres.)	
	Blood.	Urine.
I	0·160	—
II	0·280	0·280
III	0·260	—
IV	0·230	240·0
V	0·120	—
VI	0·230	220·0

The percentage in milligrammes of methyl alcohol in 100 millilitres of blood usually associated with death is not stated in the literature. Recently Keeney and Mellinkoff (1951) have reported six deaths; the percentage of methyl alcohol in the subjects' blood ranged from 0·015 to 0·150, but these deaths were all associated with high percentages of ethyl alcohol in the blood. It is known that a lethal percentage of ethyl alcohol ranges from 0·40 upwards. It appears likely, to me, that any concentration of methyl alcohol in the blood over 0·10% would probably be fatal.

Conclusion.

As a consequence to the reporting of these cases, the Commissioner of Public Health has declared methyl alcohol (above 5%) a poison under the *Pharmacy and Poisons Act*. This means that the sale of methyl alcohol will be controlled by correct labelling and bottling, and the public will be warned of the danger of drinking this substance.

Summary.

1. Six deaths from acute methyl alcohol poisoning are described, four of which occurred together.

2. The percentage of methyl alcohol in the blood causing death is estimated.

3. A measure to prevent further deaths is reported.

Acknowledgement.

I wish to thank Mr. B. L. Southern, senior analyst and research officer of the Government Chemical Laboratories, Perth, who performed all the analyses.

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WITH THE MIGRANTS IN EUROPE.

By J. N. BURGESS, M.B., B.S., D.D.R.,

Melbourne.

As radiologist to the Commonwealth Migration Department for eighteen months and for the last six months combining these duties with that of Senior Medical Officer, I had ample opportunity to study the migrants to Australia during that period.

My work was limited to the Continent, and so British migrants were not included. However, the regions traversed were all of Western Germany, as well as Austria, Trieste and Naples, and latterly Holland.

Australia has received about 200,000 displaced persons of non-Germanic origin and a few thousand Germans nominated by organizations, firms or individuals in Australia. Also agreements have been signed to accept 15,000 Italians annually for three years, and 25,000 Dutch per year for the same period.

No agreement has been signed yet with the West German Government to bring in large numbers of German nationals.

The displaced persons scheme which is now nearly finished took these people out of the camps where they had been collected at the close of the war. They were of many nationalities, Balts, Poles, Czechs, Hungarians, Jugoslavs and Jews. Most of them had been in these camps for about five years and during the war had been used for forced labour or herded in concentration camps. The majority were homeless, many were stateless, and others dared not return to their own lands. Thus Mr. Arthur Calwell, when Minister for Immigration, undertook on behalf of Australia a great philanthropic work when he volunteered to accept 100,000 as migrants, and later the present Government increased the figures, so that nearly 200,000 have arrived.

The physical and psychological condition of these people at the end of the war must have been appalling, but plenty of good food and a sheltered camp life have made a remarkable difference.

Tuberculosis was rife, 10% of the people showing evidence of active tuberculosis, while the percentage of quiescent or healed lesions could be only guessed at. The intending migrants were all submitted to X-ray examination with miniature films, but in spite of this quite a substantial number must have developed tuberculosis in the interval of waiting between examination and transhipment, while on the ship, or after arrival in Australia. At all these stages the migrants were necessarily compelled to live in crowded and sometimes unhygienic conditions.

To this must be added the poor technical quality of microfilms and the not unusual substitutions of healthy applicants who by various subterfuges took the place of tuberculous suspects and so enabled them to obtain satisfactory

small or large films. One young man showed well rounded breast shadows on his large film, but persisted in asserting that it was a film of his chest; later it was discovered that his sister had acted as substitute.

When all these factors are taken into account, if less than 1·0% of displaced persons developed tuberculosis in transit to or after arrival in Australia, then there is cause for satisfaction. As far as I can ascertain, the numbers are still well below this percentage.

Most of these people have been under intense mental strain during the war and through a period of uncertainty after it. A medical examiner could not be expected to detect concealed psychological lack of balance, minor degrees of psychiatric disease or even grosser symptoms, in a few minutes' examination with conversation directed through an interpreter who was generally sympathetic to the prospective migrant. Thus many cases of mental upset must be anticipated which may have been started or aggravated by a hostile reception in a strange land, language difficulties and climatic variations.

With sympathy and understanding these people, who have come to Australia as a veritable land of promise, will be slowly assimilated into our way of life. The greatest factor in this process of assimilation will be the children; many of them will be Australian-born, while the older ones will soon absorb Australian ways in their school life.

The Italians, finding many of their fellow countrymen here, will soon be at home, and like their predecessors will be saving up to bring their friends and relations out.

The Dutch should make exceptionally good migrants —the White Australia policy is being enforced to keep out those of Indonesian descent. The Dutch are good steady workers, thrifty and provident, and as most of them speak English they will not be so handicapped by language difficulties.

Australia needs a larger population, and so migrants must be welcomed as great assets to the country.

PREVENTION OF EYE INJURIES IN INDUSTRY.

By W. S. ROWE,
Sixth Year Medical Student.

(From the Department of Social and Tropical Medicine, University of Queensland.)

THIS discussion is not intended to be exhaustive or comprehensive. Its aim is merely to emphasize a few of the more important aspects of one major cause of eye injury in industry—the foreign body.

The harm which any foreign body may cause depends on both its capacity for producing an inflammatory reaction and its power of penetration, with resultant mechanical injury. Steel and rust can cause considerable local inflammation which undoubtedly starts as a chemical reaction. It follows that the chemical composition, size, nature and physical characteristics, as well as the speed, weight and angle of impact of the foreign body are some of the factors which will influence the degree of damage it can cause. Thus, since the force of impact depends on the momentum of the foreign body (mass multiplied by velocity), it is clear that a very small body (unless it is very sharp) has to be travelling at an extremely great speed to penetrate the cornea. In practice, few very small foreign bodies do penetrate beyond the depth at which they can just remain firmly impacted—an encouraging thought for anyone required to remove them.

We might best appreciate the very real problem of the occurrence of eye accidents in industry by considering briefly the costs of eye injuries to the employer, to the unfortunate employee and to the community at large.

It has been shown that the indirect costs of all industrial accidents amount to some four times the cost of compensation and medical services. Furthermore, those most likely to receive eye injuries—machinists, tool-makers, die and pattern workers, drill and lathe operators, and others—are skilled workmen, most of whom are not easily replaceable. The loss (even temporary) of one key man may have far-reaching repercussions on the production rate, and therefore the profits, of an organization. The employee, of course, has everything to lose. However, when the problem is regarded purely from the financial standpoint, it should be noted that the compensation paid for industrial injuries is always a fraction of the regular salary. The skilled worker who receives, say, £500 for the loss of an eye is likely to lose that or more in the first two or three years after injury—in the difference between the wage he can now earn and that which he would still have been earning with two good eyes. Few workmen realize that, at the very least, they are risking a 33⅓% cut in salary for the rest of their lives every time they risk an eye injury. These considerations pale into insignificance beside the tremendous personal suffering and mental turmoil which the loss of one (and particularly both) eyes may entail. Big readjustments are necessary, and if the personality is in any way "inadequate", unfortunate sequelæ are very likely.

The community has to support these blind and partially blind men and women, who were, for the most part, efficient industrial workers and usually the chief or sole support of a family. Moreover, they are frequently men the like of which the nation can ill afford to lose.

It remains to be said that eye injuries are far more costly than other injuries—the average compensation for cuts, lacerations and punctures of the eye is four times as great as that for similar injuries anywhere else on the body. They are also far more expensive than injuries to other parts of the body in terms of the duration of disability. This emphasis on financial considerations is necessary, since past experience has shown that the desire to save money—as opposed to purely humanitarian principles—has been responsible for most of the advances in the safety movement in industry.

With regard to the incidence of eye injuries, the most hazardous industry is metal and metal products manufacturing, while mining and quarrying, building and general construction, and lumber and wood-products manufacturing follow in that order. A significant fact is that over 50% of the accidents are caused by flying particles set in motion by hand tools, machinery and other agents. In other words, flying particles—chips of steel, iron, brass and copper—set in motion by chisels, pneumatic hammers, mechanical drills, hand files and the like cause more than one out of every two eye accidents in industry. The most common types of eye injury are the presence of foreign bodies, lacerations and punctures, burns and scalds and bruises and contusions.

Such, then, is a simple statement of the facts—as vouchsafed by eminent authorities—pertaining to eye injuries. The further fact emerges that about 90% of these injuries are preventible. A brief survey of the means which can and must be employed to ensure their prevention is therefore indicated.

Naturally, the primary cause, rather than its effects, must be attacked wherever possible. For example, the proper setting up of machinery with suitable screens will afford much protection to adjacent workers as well as to the individual machinist himself. Chisels with splayed-out ("mushroomed") ends and hammer heads in similar condition must be withdrawn from use and either "scrapped" or reconstituted if another prolific source of flying particles is to be avoided. Other examples of hazards and methods of dealing with them might be given; but our main interest in this place is in those numerous situations in industry where eye safety can be ensured only by the use of protective goggles, guards and helmets. The proper use of these devices remains unequalled as a means of preventing eye injuries. Great strides have been made in the development of such devices. Different goggles and other forms of head and eye protection have been designed for every known type of eye hazard. Goggles have been

adapted to fit the contours of the face, and in fact to meet almost every objection that might be voiced by workmen required to wear them. Obviously those goggles must be worn which are most suitable for the particular occupation, and protection against impact requires sturdy frames with hardened glass lenses. Goggles and shields are also available which fit over personal spectacles.

Thus we have the problem; we are told that it is capable of being solved, and in theory we have the solution. Why, then, do several hundred men lose an eye every year in Australian industry while thousands are partially (permanently or temporarily) incapacitated? The glibbest explanation which springs to mind is in this case the true one—it is because of the human element. Let us consider briefly how best this very real difficulty may be overcome.

The employer and his staff down to and including the foremen must first be convinced of the necessity for safety measures in their factory. Having been convinced, they must be advised how best they may institute these measures and which types of goggles their particular workmen require. The necessity for regular maintenance, particularly of the goggles and guards, cannot be overstressed. Goggles and guards cannot effectively prevent eye accidents if they do not receive proper maintenance and care. Practical procedures should be established for cleaning and sterilizing goggles, and they should be regularly inspected to see that they are in good condition and providing the protection that is needed. Employees should be encouraged to take care of their goggles, by having provided for them such things as carrying cases or suitable overnight storage spaces.

It is with the employee himself that the chief difficulty lies. How to get the employer to provide and maintain goggles and then how to get the employee to wear (and look after) them is the real problem. It may be attacked in various ways. Legislation might be passed by the States compelling employers to provide and employees to wear goggles; but this must be used only as a last resort, since it would be difficult to police, and since coercion can never compensate for enthusiasm and willing cooperation. Indeed, the Metal Trades Commonwealth award states that "employers shall provide and employees shall wear" goggles, but, unlike most other provisons in the awards, this particular one is not greatly desired by either employer or employee—apart from an enlightened minority. Consequently, if either fails to obey the award, it is more than likely that the issue will never be raised in the Arbitration Court. This state of affairs would not exist if either the employer or the employee (or both) were made to realize just how important the prevention of eye accidents is. From this it follows that the education of the unions may well be the best solution of the problem, since, once made aware of the true nature of the situation, they could be relied upon to insist to the full on their rights in the matter. Once a union had taken up the crusade its members would quickly fall into line and wear the goggles, which the employer would be forced to provide.

In a few exceptional companies throughout the Commonwealth, owing to the clear vision of the people in charge, the whole thing has been put on a much saner basis. Here the employer provides and maintains goggles for every man exposed and requires that he wear them or be dismissed. A large company which started in Brisbane in the last few years made this a rule from the beginning and no man has had to be dismissed yet. Naturally, their incidence of eye injuries is practically nil. Several large companies in America (including the Pullman Company) also have this "mandatory goggles rule", and the results have been spectacular. In the old-established firms such a change is much more difficult to institute, for, even when the management has "seen the light", the old hands have then to be extricated from their time-worn grooves. The inherent distrust of the average working man (especially if he is one of the "old school") for any innovation, particularly if it be suggested by "the boss", has to be overcome. Moreover, these older experienced men must greatly influence, deliberately or otherwise, the attitude of young apprentices.

In the last analysis, then, cooperation between employer and employee is the basis of success. Ideally, this will be obtained by a direct approach to the employers and by acquainting them with the several reasons why they should be interested and enthusiastic, and by similarly convincing the workers. Probably this will be best done through the medium of their trade unions.

The medical profession, too, can assist in what is virtually a facet of preventive medicine. Granted that the average practitioner, consciously or otherwise, exerts considerable influence over his "flock" and that the power of suggestion can be very great, it follows that he has opportunities in this regard possessed by few other men. Thus by a little subtle suggestion he could be a potent force in converting workers, particularly the older men, to the new viewpoint—especially if he has just treated them for an eye injury.

It behoves us all to think a little on this problem, for it is one fully deserving of our serious consideration.

Acknowledgements.

I should like to record here my sincere appreciation for the encouragement and generous assistance given me by Dr. Douglas Gordon, Director of Industrial Medicine, State Health Department, Queensland, and by Mr. W. Lewisson, Regional Director of the Industrial Welfare Division of the Commonwealth Department of Labour and National Service.

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Reviews.

THE MODE OF ACTION OF ANÆSTHETICS.

DR. T. A. B. HARRIS is an Australian who has won distinction in the sphere of anæsthetics in London. His book on the mode of action of anæsthetics has, therefore, an added interest for the Australian reader.[1] It is well printed, in clear type, upon excellent paper; the proof-reading has been admirable. Its 700 pages are full of concentrated facts. A summary of the main conclusions appears at the end of each chapter. Limitations of space allow us only to indicate the author's approach to his subject and his success in handling it.

Part I describes the "chemical bricks" from which the drugs used in clinical anæsthesia are built, and it sets out the physical laws which govern absorption into the body of anæsthetic gases and vapours. It describes the fixation of these agents in the tissues and discusses current theories as to how they act there. It is stated that their action consists, not in depriving the tissue-cells of their power to take up oxygen, but rather in inhibiting their oxidation of carbohydrates, from which most of their energy is normally derived. This whole section of the book is a storehouse of information which is not readily available to the practising anæsthetist and which is therefore of great value for reference.

Part II deals with the biological reactions of the body to anæsthetic drugs. On pages 136 and 160 appears the name of "E. H. Embling". This is obviously a slip for E. H. Embley, but it is an odd slip to have been made by an anæsthetist of Australian origin.

The account of respiratory physiology is adequate and that of cardiac physiology is good. The signs of anæsthesia are well described, although the author departs deliberately in minor respects from the familiar classification of Guedel. His advocacy of carbon dioxide, to abbreviate induction with

[1] "The Mode of Action of Anæsthetics", by T. A. B. Harris, M.B., B.S., D.A., F.F.A.R.C.S.; 1951. Edinburgh: E and S. Livingstone, Limited. 8½" × 6", pp. 780, with 22 text figures. Price: 42s.

even such potent agents as ethyl chloride, would not be approved by the anæsthetists of this country.

The non-volatile anæsthetics are soundly evaluated in chapters XIV and XV, which contain much useful information as to the route of elimination of various barbiturates. Oral and rectal narcosis are discussed in subsequent chapters with regional and spinal analgesia.

Part III has current interest, since it deals with muscular relaxants. The author does not distinguish between cholinergic and depolarizing relaxants and confines his discussion to tubocurarine. Of this, he gives an exhaustive account. His suggestion (page 416) that carbon dioxide be given, to distinguish between the apnœa of acapnia and curarization, is somewhat horrifying. An accumulation of carbon dioxide will break through the apnœa of "controlled respiration" in the uncurarized patient, but not in the curarized. In the latter, it will merely raise the carbon dioxide tension of the blood to dangerous levels. The author makes full use of "Prostigmin" for the purpose of "decurarization", but he nowhere indicates that an excess of it may produce depolarization and so perpetuate the curariform effect.

In Part IV is collected an encyclopædic amount of information about the immediate and remote effects of anæsthetics upon all the systems of the human body. To some extent, this implies overlap with earlier sections of the book.

In discussing post-operative respiratory sequelæ, the author tabulates (on page 547) his own army statistics, together with figures compiled by D. S. King from civilian practice in 1933. One notes, on page 563, a rather easy acceptance of subatmospheric percentages of oxygen in nitrous oxide anæsthesia for minor dental operations. One would have expected the author to condemn this technique out of hand. The use of induced arterial hypotension is discussed on page 569. Spinal analgesia and arteriotomy are mentioned in this connexion, but the methonium compounds are not. The problem of post-anæsthetic vomiting receives full discussion.

On page 633 begins an informative account of obstetrical analgesia and anæsthesia. The author, whilst conceding the analgesic potency of trichlorethylene, deprecates its use because it may cause primary cardiac failure. There is pharmacological support for this attitude. At the same time, trichlorethylene in hypnotic dosage, alone or combined with nitrous oxide-oxygen, is now very widely used for the relief of pain in labour. There is, by now, probably enough statistical evidence for the reality of the danger to the heart in such cases to be assessed. It remains for that evidence to be collated.

On pages 661 and 692 it is stated that the use of a closed (an absorption) system will eliminate the danger of fire with the inflammable anæsthetics. In actual fact, no absorption system should ever be trusted.

A valuable section upon the regulation of body temperature during anæsthesia appears on page 664. The last fifteen pages of the volume deal with fire and explosion during anæsthesia.

In conclusion, be it said that Dr. Harris has produced an important book. It is one not easily read and some of its precepts are open to question. But as a whole it can be regarded with admiration. His book is not intended for the student or the occasional anæsthetist. For the specialist, however, and particularly for the teacher, it provides a veritable mine of information.

LABORATORY TECHNIQUE.

IN order to assess the value of "Approved Laboratory Technic", by J. A. Kolmer, E. A. Spaulding and H. W. Robinson,[1] the expedient was adopted of consulting it, as if seeking information concerning various investigations called for in the course of daily work over a period of some weeks in a clinical laboratory. It soon became apparent that the book (even in the face of dollar exchange and import restrictions) should be in the library of a clinical pathologist. Details of technique are fully set out and easy to follow; to many of the factual descriptions, practical and illuminating comments are added, which bespeak thorough trial and satisfaction with the reliability of the methods given, and appreciation of possible difficulties, by the experienced and thoughtful authors and their seventeen collaborators. For example, where standard techniques may not be easily applicable in the case of young children, helpful modifications or alternative methods are suggested.

The range of procedures described is comprehensive. The book has sections on general laboratory methods (including practical advice on prevention and treatment of laboratory accidents), clinical pathology and hæmatology, bacteriology, mycology, virology, parasitology, serology (in which is incorporated a description of the preparation and preservation of plasma and serum), clinical chemistry, morbid anatomy and histology. The work is profusely illustrated with excellent figures, both photographic and diagrammatic, and coloured plates.

There is little to criticize, and one senses throughout the influence of the authors' own foreword: "No laboratory examination can be better than the thoroughness and skill with which it is carried out."

[1] "Approved Laboratory Technic", by John A. Kolmer, M.D., D.P.H., Sc.D., F.A.C.P., Earle H. Spaulding, Ph.D., and Howard W. Robinson, Ph.D.; Fifth Edition; 1951. New York: Appleton-Century-Crofts, Incorporated 10" × 7", pp. 1192, with 403 illustrations and 28 colour plates. Price: $12.00.

"THE QUEEN CHARLOTTE'S TEXT-BOOK OF OBSTETRICS."

THE eighth edition of "The Queen Charlotte's Text-Book of Obstetrics" has been "thoroughly revised".[1] The contents of the book are very similar to the previous edition but have been largely rearranged.

Magnesium sulphate is mentioned for the first time in the treatment of eclampsia, but is apparently rarely used. Hormone therapy is mentioned as a means of treatment in reducing the infant mortality among diabetic patients. The chapter on the abnormal puerperium has been rewritten and treatment with the newest antibiotics included. A lucid chapter is presented on the association of reproduction with psychiatric illnesses.

In other respects the book has followed the high standard of its predecessors and can again be recommended to students and practitioners.

SURGICAL TREATMENT.

IN the preface to the latest edition of his "Textbook of Surgical Treatment", Professor Illingworth states that he has made many alterations and additions to his book in order to keep abreast of the many advances in surgical treatment made during the last three years.[2] This he has succeeded in doing to a large extent without losing the original character of the book. In order to keep the size of the volume within moderate limits the consideration of some subjects is of necessity not very profound or detailed. Thus, in the section on maintenance of fluid balance and electrolyte physiology there are a good deal of vagueness and a minimum of reasoning. Transfusion is given in cases of hæmatemesis when the "blood pressure falls below 70 millimetres of mercury", but no reason for this dogmatic statement is given. Thus some qualities, admirable in a post-graduate text-book such as this, are sacrificed for the sake of brevity. Fortunately this brevity enables many fundamental and essential aspects of treatment to stand out more clearly. It is understandable that this brevity leaves little, if any, room for more than one method of treatment to be considered for any one condition. But some would disagree with the opinion that there is no place for X-ray therapy in

[1] "The Queen Charlotte's Text-Book of Obstetrics", by the following members of the Clinical Staff of the Hospital: G. F. Gibberd, M.B., M.S., F.R.C.S., F.R.C.O.G., Arthur C. H. Bell, M.B., B.S., F.R.C.S., F.R.C.O.G., Hon. M.M.S.A., Douglas Macleod, M.S., F.R.C.P., F.R.C.S., F.R.C.O.G., W. R. Winterton, M.B., F.R.C.S., F.R.C.O.G., H. G. E. Arthure, M.D., F.R.C.S., F.R.C.O.G., Briant Evans, M.B., B.Ch., F.R.C.S., M.R.C.O.G., Kathleen M. Robinson, M.D., F.R.C.S., M.R.C.O.G., S. G. Clayton, M.D., M.S., F.R.C.S., F.R.C.O.G., with the assistance of Thomas Hunt, D.M., F.R.C.P., A. White Franklin, M.B., B.Ch., F.R.C.P., E. Rohan Williams, M.D., F.R.C.P., F.F.R., D.M.R.E., J. Murray, M.D., G. W. B. James, C.B.E., M.C., M.D., D.P.M.; Eighth Edition; 1952. London: J. and A. Churchill, Limited. 9½" × 6¼", pp. 544, with four coloured plates and 273 text figures. Price: 37s. 6d.

[2] "Textbook of Surgical Treatment: Including Operative Surgery", edited by C. F. W. Illingworth, C.B.E., M.D., Ch.M., F.R.C.S.E., F.R.F.P.S. (Glasgow); Fourth Edition; 1952. Edinburgh and London: E. and S. Livingstone, Limited. 10" × 6½", pp. 756, with 381 illustrations. Price: 45s.

the treatment of osteogenic sarcoma or that surgery is never indicated in Ewing's tumour.

Yet with due regard to these minor shortcomings one cannot but admire the skill with which so much splendid information is condensed in one volume, with little sacrifice of style or clarity in presentation. It will suit a wide variety of general practitioners and surgeon specialists.

"CONYBEARE'S MEDICINE".

COMPILATION of a modern text-book of medicine must prove a most difficult task, for the problem is what should be omitted rather than what should be included. The editors of the tenth edition of the well-known "Conybeare" are to be congratulated on restricting the volume to 900 pages, though in places this has resulted in too brief a description of conditions that have gained increasing recognition and importance.[1] For example, brucellosis and homologous serum jaundice deserve more detail, while no reference to the well-known Guillain-Barré syndrome can be found in text or index, eight lines devoted to acute febrile polyneuritis apparently being deemed adequate.

The only real weakness of the volume lies in the sections devoted to treatment. Advances in the therapy of many diseases are often so rapid as to make it impossible for any text-book to keep abreast of them, and it would at times be well to recognize this by referring the reader to recent literature. However, there is no need to retain the obsolete. Few experienced physicians will agree with the statement that in early cardiac failure it is doubtful whether anything will be gained by giving digitalis provided that rhythm is regular, with the sixteen-years-old warnings against the use of quinidine in auricular fibrillation, or with the minimum month in bed for all subjects of coronary thrombosis. Morphine seems the only drug suggested for pain of all types, pethidine and intravenously administered papaverine gaining no mention. Cortisone and ACTH are not suggested in angioneurotic œdema when life is threatened, and the dictum that implantation of two to four 100-milligramme pellets of "DCA" should be performed every six to eight months in Addison's disease is fraught with danger, as each sufferer provides a strictly individual problem.

In spite of this the volume is one of the best of the smaller British text-books of medicine for the use of students, and the print is a model of clarity.

LIVING IN BALANCE.

"LIVING IN BALANCE" is an attempt by Dr. Frank S. Caprio to help neurotics to help themselves.[2] It is primarily written for the patient. The author makes the book his consulting room and uses personal experiences to build up his prestige in order to enhance his dogmatic opinions. The technique has merit and in selected cases would be of benefit.

The opening chapters are devoted to a discussion as to who is a neurotic. According to the author there are no less than 10,000,000 neurotics in the United States of America. They include the neurasthenics, hysterics, hypochondriacs and anxious folk in a constant state of tension. In addition there are many who are vaguely unable to adjust themselves intelligently to changing situations. They are the "Yes Buts", always finding excuses for their own childishness and shortcomings. Dr. Caprio believes that the most important step in the cure is to let the patients know the subconscious motive behind the symptom complaint.

The chapter headings illustrate the trend of the discussions: "Undesirable Personality Traits", "Don't Make Your Nerves Punish You", "Nervous Indigestion", "Avoiding an Unhappy Marriage", "Jealousy", "Four Types of Neurotic Wives", "Four Types of Neurotic Husbands", "Love Must Be Earned", "Control of Negative Thinking", *et cetera*.

The book has much straight-from-the-shoulder advice in the American way. Thus, in marriage "complain as little as you can. The average person rebels against people who are always faultfinding, who are continually ailing and running to doctors, who gripe about their jobs and their responsibilities at home. Normal people plan in silence and remedy situations that become trying. It's better to do something about something than to complain and do nothing." "A vain wife is like a beautiful car with a bad motor—good to look at but doesn't get anywhere." "The alcoholic is an emotionally immature person with a nipple-complex; an adult child who has never been psychologically weaned from his mother's breast." "If you would be loved be lovable."

The author's conception of self-analysis through dream interpretation is open to criticism as "archaic" and should be altered in another edition. However, few patients will have the patience to follow his advice in this.

"Living In Balance" may be recommended to neurotic patients who have the intelligence to learn from books and the tenacity to wrestle with the difficulties encountered from changing a point of view.

[1] "Textbook of Medicine", by various authors, edited by John Conybeare, K.B.E., M.C., D.M. (Oxon.), F.R.C.P., and W. N. Mann, M.D. (London), F.R.C.P.; Tenth Edition; 1952. Edinburgh and London: E. and S. Livingstone, Limited. 9½" × 7", pp. 928, with 31 plates and 31 text figures. Price: 37s. 6d.

[2] "Living in Balance", by Frank S. Caprio, M.D.; 1951. Washington: The Arundel Press, Incorporated. 8½" × 6", pp. 256. Price: $3.75.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Normal Blood Pressure and Hypertension: New Definitions", by Arthur M. Master, M.D., Charles I. Garfield, M.D., and Max B. Walters, M.D., F.R.C.P. (Can.); 1952. Philadelphia: Lea and Febiger. Sydney: Angus and Robertson, Limited. 9½" × 6", pp. 144, with 36 illustrations. Price: £2 3s.

The work was undertaken "in an attempt to establish the *true normal* limits of the blood pressure".

"The Unipolar Electrocardiogram: A Clinical Interpretation", by Joseph M. Barker, M.D., F.A.C.P., assisted by Joseph J. Wallace, M.D., F.A.C.P., and Wallace M. Yater, M.D., F.A.C.P., with a foreword by Frank N. Wilson, M.D., F.A.C.P.; 1952. New York: Appleton-Century-Crofts, Incorporated. 10" × 7", pp. 668, with 458 illustrations.

The author's primary purpose is to furnish guidance in unipolar electrocardiography for students and physicians.

"Blackwell Scientific Publications: Complete Catalogue, 1952." Oxford: Blackwell Scientific Publications, Limited. 8½" × 6", pp. 82.

Includes new and forthcoming publications. A copy will be sent to any reader on request to the publishers.

"Cardiographic Technique: A Manual for Cardiological Technicians", by S. L. Barron and A. Schott, M.D. (Heidelberg), M.R.C.S.; 1952. London: William Heinemann (Medical Books), Limited. 9" × 6", pp. 164, with 58 illustrations. Price: 21s.

Professor J. Crighton Bramwell, of Manchester, writes a foreword.

"The History and Development of Neurological Surgery", by Ernest Sachs, A.B., M.D.; 1952. New York: Paul B. Hoeber, Incorporated. 8½" × 6", pp. 158, with 50 illustrations. Price: $5.00.

The author begins with the neolithic period and deals with successive periods up to the present day.

"The Culture of the Abdomen: The Cure of Obesity and Constipation", by F. A. Hornibrook, with a preface by William Arbuthnot Lane, Bart., C.B., M.S.; Eighteenth Edition; 1952. London: William Heinemann (Medical Books), Limited. 9" × 6", pp. 110, with 40 illustrations. Price: 10s. 6d.

The first edition was published in 1924.

"The Will to Live", by Arnold A. Hutschnecker, M.D.; 1952. London: Victor Gollancz, Limited. 7½" × 5½", pp. 286. Price: 13s. 6d.

The author's purpose is "to make people understand the enigma of health".

"Migraine and Periodic Headache: A New Approach to Successful Treatment", by Nevil Leyton, M.A. (Cantab.), M.R.C.S., L.R.C.P.; 1952. London: William Heinemann (Medical Books), Limited. 7½" × 5", pp. 128. Price: 12s. 6d.

The author presents "a relatively simple method of tackling the migraine problem".

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All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: surname of author, initials of author, year, full title of article, name of journal without abbreviation, volume, number of first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

AFTER THE CONGRESS.

THE eighth session of the Australasian Medical Congress (British Medical Association) is over; the members, more than twelve hundred in number, have gone to their homes; and, as far as can be gathered, most of them are high in their praises of what was done and of how it was done. It was something like a big party—the visitors have gone home and the hosts, the organizers, still have the "washing-up" to do. But the gathering was more than a party of that kind, for some of the so-called visitors were really hosts—the Executive Committee, apart from its ex-officio members, acted for the whole Victorian Branch. Everyone, especially those connected with the actual running of the several Congress offices while the session lasted, will acknowledge the sympathetic supervision and encouragement of the President, Sir John Newman-Morris, and the charm and competence of his daughter, Mrs. H. A. Standish, who acted as President of the Women's Executive Committee. With the same breath all who know anything about the running of gatherings of this kind will pay a tribute to the enormous amount of work carried out by Dr. C. H. Dickson, the General Secretary, and his assistant, Dr. Geoffrey Newman-Morris, and to their organizing ability. They had the assistance of a number of chairmen of subcommittees who were carefully chosen, given a piece of work to do and allowed to do it without interference—a method of working which is not always adopted. It is to the successful organization of the Congress that reference has most often been made in reports so far received.

"Washing-up" has been mentioned. Most of the Executive Committee's "washing-up" will probably be concerned with financial matters, but there is another matter to which its attention might be directed. In the recent Congress a change was made from previous sessions in that the number of plenary sessions was increased at the expense of the meetings of individual sections. It would be useful to the executive committees of future sessions if the Executive Committee of the eighth session would inform the Federal Council of its considered opinion of the value and acceptability of the change it adopted. The rest of the "washing-up" probably rests with THE MEDICAL JOURNAL OF AUSTRALIA. "Congress Numbers" will be published as usual, and in these will appear a summary of every paper presented at the session, together with an account of the discussion. In regard to the publication of papers the position is clear. The Editor of THE MEDICAL JOURNAL OF AUSTRALIA has the right to select for publication in full any paper which he deems suitable for his purposes, even though he has already published a summary of it. Authors of papers may also ask him to publish their papers—in other words, they may submit their papers to him just as they might if the papers had not been read at Congress at all. If the Editor does not select the paper of an author, or if he does not wish to accept it when it has been offered to him, the author is free to offer it for publication to any other journal.

The conclusion of a medical congress, such as our own, is something like the death of a monarch: "The King is dead; long live the King"—as soon as one session of Congress is gone, we look for the next. On this occasion, however, the interval will be three years instead of two, as on the last two occasions. The ninth session will be held at Sydney in 1955. At present we propose to do no more than remind readers of this fact. We have the pleasant memories of the Melbourne session; there is no doubt that its stimulus—its most important feature—will endure for a considerable time.

THE AUSTRALASIAN CARDIAC SOCIETY.

THE cardiologists of Australia and New Zealand have formed a society which is to be known as "The Australasian Cardiac Society". It has as its object "the advancement of knowledge of Diseases of the Heart, and the promotion of good fellowship among those whose primary interest is in the practice of Cardiology, or in research in this or allied subjects". It proposes to pursue these objects "by meetings for communications and discussions, by lectures and by other means". Members will be of several kinds; there will be ordinary and associate, as well as honorary and corresponding, members. Ordinary members are not to exceed fifty in number and not more than five are to be elected each year; in addition there may be ten surgical members with the status of ordinary members who may be elected for their interest in cardio-vascular surgery. Associate members will be elected for three years and will be eligible for reelection as associate members or for election as ordinary members. There is one provision which is likely to be disadvantageous to the society. The committee is to consider the names proposed for membership and is to recommend the names of those thought suitable, "paying due regard to territorial representation". To have regard to anything apart from knowledge and attainment will tend to defeat the objects of the society; particularly should it be impossible for interstate or interdominion feeling to come into the picture. Honorary members may be elected from men and women of distinction in medicine, at home or abroad, who have contributed to the advancement of cardiology; corresponding members may be elected on the nomination of the committee from recognized cardiologists outside Australasia.

Though some people may look doubtfully at the birth of special societies devoted to restricted branches of medical study, the wish of cardiologists to meet for the mutual exchange of ideas can be well understood, and for this reason the new move should be welcomed. If the new body is wisely guided and used only for the attainment of its declared objects, it cannot fail to increase knowledge of the subject. Apparently the society has the blessing of The Royal Australasian College of Physicians, and its annual meeting will be held just before the annual meeting of the College. The society is founded on the same lines as the British Cardiac Society and is affiliated with the International Cardiac Society. The first chairman is Dr. G. A. Lendon, of Adelaide, and Dr. E. F. Gartrell, also of Adelaide, is Honorary Secretary and Treasurer.

Current Comment.

SURGICAL TREATMENT OF AORTIC SEPTAL DEFECT.

IT is a quarter of a century since the third edition of the Osler "System of Medicine" was published, not long after the death of the distinguished editor. At that time there may have been some who felt that two hundred pages represented perhaps an unduly large contribution on the subject of congenital disorders of the heart; yet today even the encyclopædic chapter by Maude Abbott is hardly sufficient. The insistence of Osler and others upon morbid anatomy has of recent years been justified by the potentialities of modern surgery of the heart. Robert Gross has published an account of the remarkably successful results of a courageous attack on one of the rarer cardiac abnormalities.[1] He regrets in his article that the published descriptions of aortic septal defects are not even more detailed, and asks for further attention from clinicians and pathologists. The particular malady of which he writes is due to a shunt between the aorta and the pulmonary artery caused by imperfect development of the septum which divides the two great vessels in the embryo, quite distinct from the opening left by imperfect closure of the *ductus arteriosus*. This uncommon defect is situated below the site of the ductus, and close to the orifices of the coronary vessels, and has an opening which may be variously shaped, like different geometrical figures, or merely a slit. The important point about this defect is that it may be indistinguishable from the persistent *ductus arteriosus*, especially in regard to the continuous murmur. A thrill may be present also in either condition. X-ray studies afford evidence of a left to right shunt, with some enlargement of the pulmonary artery and enhanced pulmonary circulation, and electrocardiography does not help to distinguish the two lesions. Gross states that cardiac catheterization may fail to indicate the site of the communication unless the operator has the good fortune to pass through the opening just above the pulmonary valve. Retrograde aortography has been successful in demonstrating the opening. Of course, if the patient is submitted to operation the diagnosis is quickly made, for the site of the maximum thrill can be determined, and the thrill can be abolished only by pressure over the pulmonary artery below the reflection of the pericardium when the communication is in this region. Gross quotes a number of descriptions of this lesion in the literature, but in his success in surgical attack he has broken fresh ground. His patient was a little girl, aged four years; her physical signs were thought to be diagnostic of a patent *ductus arteriosus*, and the murmur was considered to be characteristic. This is important, as the surgeon was confronted with a condition other than that he expected. There was no lumen in the remnant of the ductus, but opening the pericardium revealed the presence of a septal defect, which was proved to be the source of the thrill and murmur. With great care the surgeon was able to expose the fistula under the epicardium, and to dissect down between the great vessels until an aneurysm needle could be passed round the communicating channel. The great danger in this manœuvre was clearly realized, and when a tape was drawn through arterial bleeding began. Fortunately, the only possible step likely to meet this emergency was successful, and tying the tape controlled the bleeding and closed the fistula. Gross with commendable restraint now publishes this account three years after the operation, and is able to record that the child is well and active and that no signs of her lesion persist. He remarks that the surgical exposure, a left antero-lateral approach, was suitable for the presumed ductal lesion, but not for the procedure carried out. Therefore he is now prepared to extend his incision in case such an unexpected condition necessitates division of the sternum. He points out that "a high degree of luck" attended this skilfully conducted procedure, and warns that simple ligature would certainly not be successful in all cases. Rather it would seem advisable to devise a technique requiring special clamps which would permit suture of the defects in the walls of the vessels. The thin wall of the fistulous connexion makes the manœuvre of dissection and ligature most hazardous, but it is cheering that the outcome of the first case was so happy. It is also satisfying to realize that the patient descriptive work of pathologists is not only of value, but could be extended with advantage.

[1] *Circulation*, June, 1952.

COBALT IN NUTRITION.

THE discovery in 1934 by Marston in South Australia and Underwood and Filmer in Western Australia that sheep and cattle fed on certain pastures developed a disease characterized by progressive wasting with profound anæmia and loss of appetite, and the cure of this disease by small doses of cobalt, opened up a new chapter in the study of animal nutrition. The discovery in 1946 that the antipernicious anæmia vitamin B_{12}, isolated from mammalian liver, contained close to 4% of cobalt stimulated the search for the function of cobalt in animals. Hedley Marston, Chief of the Division of Biochemistry and General Nutrition, Commonwealth Scientific and Industrial Research Organization, Adelaide, in an article on cobalt, copper and molybdenum in the nutrition of animals and plants,[1] has given a very full review of the use of cobalt and vitamin B_{12} in animals, including man. Very small amounts of cobalt are needed by ruminants (for sheep about 0·07 to 0·08 milligramme per day), but it must be given by mouth; parenteral administration has no effect. It soon became evident that, in the ruminant, the function of cobalt was concerned, primarily, with the mixed population of microorganisms which normally flourish in the paunch and which play a fundamentally important part in the nutrition of the ruminant. Early in the experimental study of the disease attempts were made to treat the disease with liver and liver extracts with very little success. The discovery that vitamin B_{12} contains cobalt led to the discovery that large amounts of vitamin B_{12} are normally produced in the rumen and that its synthesis there is seriously diminished if the amount of cobalt ingested is low; these findings suggested that the syndrome might be due to deficiency of vitamin B_{12}. The injection of doses of vitamin B_{12} equivalent to those given to humans with pernicious anæmia had very little effect, but twenty times this dose produced dramatic improvement in the animals. Clearly then ruminants, presumably because of the difference of their metabolism from that of other animals, need, and normally get, very much larger quantities of vitamin B_{12}. Five apparently different substances have been isolated which have the effects of vitamin B_{12}. These are as follows: vitamin B_{12}, which is isolated from the liver and has a cyanogen group attached to the cobalt of the complex; vitamin B_{12a}, which is obtained from catalytic hydrogenation and subsequent

[1] *Physiological Reviews*, January, 1952.

oxidation of vitamin B_{12}, vitamin B_{12b}, which is isolated from the liver and other sources, the cyanogen being in both cases replaced by a hydroxyl group; vitamin B_{12c}, which is isolated from certain bacteria, nitrite replacing the hydroxyl group of vitamin B_{12b}; vitamin B_{12d}, which is obtained by removing the nitrite from vitamin B_{12c} and is now known to be identical with vitamin B_{12b}. In the treatment of pernicious anæmia these complexes appear to function in an identical manner. The chemical constitution of vitamin B_{12} is not yet known, but it is a very complex substance in which the cobalt is firmly fixed. It has been suggested that the name cobalamin be given to cyanogen-free residue, cyano-cobalamin to vitamin B_{12} and hydroxo-cobalamin to vitamin B_{12a} and B_{12b}.

The first reports of the response of the blood dyscrasia of Addisonian pernicious anæmia to parenteral injection of a few microgrammes of pure crystalline vitamin B_{12} have been amply confirmed; and the favourable remission of the neurological complications and of the other symptoms indicates that, unlike pteroylglutamic acid (folic acid), vitamin B_{12} completely replaces the potency of injectable liver extracts for the treatment of this disease. When administered by mouth, vitamin B_{12} acts like Castle's extrinsic factor and needs the intrinsic factor for its absorption. This is best supplied by normal gastric juice. The absorption takes place from the upper part of the duodenum. If put into washed intestinal loops lower down, it is not absorbed. Vitamin B_{12} is produced in relatively large quantities by bacteria in the lower part of the gut, even in pernicious anæmia patients, but is not absorbed. It is probably in some combined form in the bacteria, and the intrinsic factor may set it free in the duodenum.

There are several different kinds of megaloblastic anæmia in man. Pteroylglutamic acid, in relatively large doses, improves, but only temporarily, the blood picture in true pernicious anæmia; but it fails to alleviate the nervous disorder and may even precipitate the nervous disorder when the blood picture is normal. On the other hand, a small amount of vitamin B_{12} brings about complete remission of all symptoms. In the megaloblastic anæmia associated with pregnancy and the puerperium, vitamin B_{12} has no effect, but pteroylglutamic acid may bring about a complete cure. Other types of megaloblastic anæmia, associated with malnutrition, vary in their response to vitamin B_{12} and pteroylglutamic acid. That toxins play an important part in pernicious anæmia has long been considered probable. Certain human megaloblastic anæmias respond well to treatment with penicillin, pernicious anæmia in relapse responds definitely, though submaximally, to aureomycin given by mouth, and aureomycin added to the foodstuff will decrease the vitamin B_{12} requirements of chickens and pigs. These facts indicate that hæmatopoiesis may be influenced by substances produced in the lumen of the intestine, and sufficient vitamin B_{12} overcomes these effects.

The higher plants are devoid of vitamin B_{12}, and all the evidence points to the production of this vitamin by microorganisms only, although some bacteria need it as an essential nutrient. Vitamin B_{12} has been shown to be identical with the so-called animal protein factor. Concentrates of vegetable origin cannot effectively replace those of animal origin in the rations for pigs and poultry. As all animals seem to require vitamin B_{12}, the position of certain herbivora seems to be insecure in respect of requirements of this food factor. The fact that large amounts of vitamin B_{12} are produced by microorganisms in the lower part of the gut and that it cannot be absorbed here leads to the belief that coprophagy should not be considered a depraved appetite. It is universal in rabbits and probably also in other animals. How humans living on a purely vegetable diet obtain vitamin B_{12} does not seem to have been studied. As to the mode of action of vitamin B_{12} in the body, this is not yet clear. It is definitely related to methylation processes, for adequate amounts of vitamin B_{12} in the diet can make good an inadequate supply of methylene donors such as choline, but it cannot entirely replace choline. The symptoms of induced hyperthyroidism can be relieved by administration of vitamin B_{12}, but the method of action is still obscure. In hyperthyroidism there is increased breakdown of proteins, and the evidence at present available implies that vitamin B_{12} favours protein synthesis. There is also evidence that vitamin B_{12} is involved in the synthesis of ribonucleic acid. Nothing is known of how the vitamin favours hæmatopoiesis.

CARCINOMA OF THE UTERINE CERVIX.

AN important study has been made by A. Lindell[1] of 5509 patients with carcinoma of the uterine cervix, of whom 5258 were treated at the *Radiumhemmet* (clinic) in Stockholm over the years 1914 to 1944. In Sweden before 1910 only surgery was undertaken for patients with cervical cancer; then for a few years patients with inoperable lesions were referred to the radium clinic. In later years, however, according to H. L. Kottmeier,[2] practically every patient with carcinoma in Sweden has been referred to a radiotherapeutic institution. Conditions for follow-up in the clinic appear to approach the ideal; no patient has been "lost", owing largely to frequent reexaminations in the first few years after treatment. It is practicable here only to mention briefly some of the conclusions reached in Lindell's monograph, of which the first part is devoted to the clinical aspects and the second part to the demographic. In Sweden, the age distribution of cervical carcinoma has remained rather constant over the years 1914 to 1944. Age has two effects: the younger women, under thirty years, tend to present with earlier lesions, but with any given grade of cancer the prognosis is worse in younger women. (The grading is that recommended by the League of Nations.) However, with all grades combined, these two factors together result in the prognosis being more favourable in young women. In the period 1935 to 1944, for all women, the recovery rates were as follows: Stage I, 70%; Stage II, 50%; Stage III, 24%; Stage IV, 11%. Detailed tables are given in the monograph from which may be found the effects of age and stage and calendar year on the prognosis. Deaths have been divided into those due to cancer and those due to intercurrent disease (only about 2%) by year after treatment. A second part of Lindell's monograph is devoted to obtaining a morbidity rate, that is, the number of new cases per year per 10,000 of a given age group. The rates have been increasing in every age group since 1920, where such a comparison can be fairly made. Lindell's beautifully printed monograph, with its well-designed diagrams and tables, should serve as a useful source of reference. The methodology may be compared with that employed in a study of gastric cancer by J. Berkson *et alii*,[3] of the Mayo Clinic, who make very good use of a semilogarithmic scale.

CHLORAMPHENICOL AND SHIGELLA DYSENTERY.

CHLORAMPHENICOL appears to be particularly valuable in the treatment of acute shigella dysentery. In 1950 S. Ross *et alii*[4] treated 35 children suffering from shigella dysentery with chloramphenicol. In all but one case the pathogen disappeared promptly from the stool and the clinical response was correspondingly good. Ross *et alii* listed sulphadiazine, polymyxin B, streptomycin and chloramphenicol as specifics in the treatment of shigella dysentery, but would not name a drug of choice. In a report from Hong Kong A. J. S. McFadzean and Peter D. Stewart[5] are more definite. They treated two adult groups, one of 96 persons and one of 92, with chloramphenicol and sulphadiazine respectively. The antibiotic produced quicker results, bacteriological and clinical, and resistance to it, unlike sulphadiazine, was not encountered. Moreover, there was not the same bother about urinary output, and earlier treatment was possible in many cases.

[1] *Acta radiologica*, Stockholm, Supplement XCII, 1952.
[2] "Experience in Malignant Tumours in the Female Pelvis" Flexner Lectures, 1951, Vanderbilt University, Baltimore.
[3] *Proceedings of the Staff Meetings of the Mayo Clinic*, April 9, 1952.
[4] *The Journal of the American Medical Association*, August 26, 1950.
[5] *The Lancet*, July 26, 1952.

Abstracts from Medical Literature.

PATHOLOGY.

Chorioadenoma Destruens.

C. P. HODGKINSON (*American Journal of Obstetrics and Gynecology*, December, 1951) states that *chorioadenoma destruens* is a non-metastasizing, locally invasive chorionic tumour. Invasion of the pelvic veins by the tumour is not evidence of hopeless malignancy. A patient is reported who has survived more than five years after hysterectomy and X-ray therapy.

Pulmonary Hæmorrhage in Infants.

E. K. AHVENAINEN AND J. D. CALL (*The American Journal of Pathology*, January-February, 1952) found massive pulmonary hæmorrhage in 67 of 4000 infants at post-mortem examination. It occurred more frequently in newborn infants; 77·5% of the cases occurred in infants less than fifteen days old. It may occur adjacent to nearly every part of the intrapulmonary vascular system—arteries, capillaries, veins and bronchial arteries. In practically all cases, massive pulmonary hæmorrhage arises from alveolar capillaries and from veins in the interlobular septa. Massive alveolar hæmorrhage, without septal hæmorrhage, is found more commonly in infants living at birth than in stillborn infants. On the other hand, large septal hæmorrhage without alveolar hæmorrhage is found in stillborn infants more frequently than in infants living at birth. Septal hæmorrhages usually originate from the septal veins, but are seen occasionally about pulmonary arteries and may originate from the *vasa vasorum* of those vessels, which are part of the bronchial circulation. Capillary rupture sometimes is demonstrable in cases of alveolar hæmorrhage. In cases of massive pulmonary hæmorrhage alveolar hæmorrhage (without septal hæmorrhage) is found more often in the full-term than in the premature infant. Massive pulmonary hæmorrhage is not a distinct entity, but may occur as a fatal complication of several severe diseases in infancy, the most common being infection, intracranial hæmorrhage, kernicterus and congenital heart disease. In most cases it is not an agonal phenomenon. Infection is more frequently associated than any other condition with massive pulmonary hæmorrhage in infants. Organisms most commonly cultured include *Staphylococcus aureus, Escherichia coli* and *Streptococcus hæmolyticus*. Pulmonary congestion appears to be an important factor in the pathogenesis of massive pulmonary hæmorrhage. The structural differences between intrapulmonary veins and arteries become less distinct with increasing age of the fœtus and continue to disappear after birth. In premature infants weighing less than 750 grammes at birth, the small intrapulmonary veins consist of endothelium with one or two thin subendothelial elastic tissue fibres surrounded by a layer of loose collagenous tissue. During fœtal life the inner layer of the venous wall becomes thicker and more compact, and elastic tissue fibres of the inner layer are increased in number and thickness. In the full-term infant there is a sharp borderline between inner layer and adventitia, and the inner layer forms about one-third of the thickness of the venous wall. After birth, elastic tissue and other elements of the inner layer grow continuously, especially in premature infants during the first month of life. The lymphatics of the vein at the branching points of the vessel are separated from the lumen of the vessel in many instances by only a small amount of elastic tissue or reticulum fibres. Anatomically, this appears to be a weak point in the venous system.

Atheroma of Renal Arteries and Kimmelstiel-Wilson's Syndrome.

G. F. M. HALL (*The Journal of Pathology and Bacteriology*, January, 1952), on the basis of the findings in a series of 135 diabetics, describes two types of glomerular lesions occurring in diabetic glomerulosclerosis, the nodular lesion and the exudative lesion. The clinical and post-mortem findings are recorded in eight cases of Kimmelstiel-Wilson's syndrome in which the patient died in uræmia. Gross atheroma with much narrowing of the renal arteries was present in all eight cases. The author states that atheromatous involvement of the large and small branches of the renal artery gives the kidney a characteristic macroscopic appearance. The histological picture in all eight cases was distinctive, the predominant feature being ischæmic obliteration of vast numbers of glomeruli. Atheroma of the renal arteries of comparable degree has been seen only in one other case, which did not have similar clinical and histological features. In 43 other cases of diabetic glomerulosclerosis there was no evidence that the renal lesion, uncomplicated by renal artery atheroma, was responsible for death. The pathogenesis of the massive obliteration of glomeruli is discussed, and it is concluded that obliteration results from atheromatous narrowing of the renal arteries superimposed on severe arteriosclerosis.

Gastric Carcinoma: A Multicentric Lesion.

W. T. COLLINS AND E. A. GALL (*Cancer*, January, 1952) describe how large sections (eight by twelve centimetres) were prepared from 117 specimens of gastric carcinoma and included generous margins of adjacent mucosa. Examination of 45 of the specimens (38%) revealed a pleomorphic pattern with regional distribution of such nature as to suggest a coalescence of neighbouring independent tumours. In 22 specimens, a contiguous plaque of pre-invasive carcinoma of varying length abutted upon the margin of the presenting carcinoma. In 26 stomachs, multiple, independent neoplastic lesions were detected. Four of these were appreciated grossly; the remainder were microscopic in size and pre-invasive in character. Many of the pre-invasive carcinomatous focuses had a histological structure unlike that present in the grossly evident cancer. In all, 65 (56%) of the specimens had one or more of the features described. Since the study, in the main, was limited to single sections and thus reflected the incidence of the phenomena in one plane, a supplementary survey was carried out with three to four radial sections in 10 stomachs in which the original examination did not reveal multicentricity. Four of these had evidence of related or independent pre-invasive carcinoma in the additional random sections. It is believed that the phenomena of pleomorphism in the large lesions and the contiguous and independent focuses of pre-invasive carcinoma indicate that cancer of the stomach may often be of multicentric origin.

The Pathology of Hepatitis.

K. WEINBREN (*The Journal of Pathology and Bacteriology*, April, 1952) describes the histological features in 136 specimens of liver biopsy material taken from 107 patients with hepatitis. An attempt is made to correlate the histological features with the level of serum bilirubin and with the ultimate course of the disease. The author states that the histological features associated with a high serum bilirubin level are (i) centrilobular and peripheral loss of liver cells, (ii) heavy portal infiltration and (iii) numerous bile thrombi. The features found in cases which go on to ultimate fibrosis are (i) distortion of the reticulin pattern and (ii) early evidence of bile duct proliferation and fibroblasts in the portal tracts. Rapidly fatal cases (fulminant fatal hepatitis) rarely show the presence of bile thrombi. The jaundice in hepatitis is considered to be due to three mechanisms: (i) lack of function or death of liver cells, (ii) obstruction of bile flow by bile thrombi in the canaliculi, (iii) increased permeability of smaller bile ducts and canaliculi.

Intestinal Lipodystrophy of Whipple.

A. C. CHRISTIE AND D. A. G. GALTON (*The Journal of Pathology and Bacteriology*, April, 1952) describe a case of intestinal lipodystrophy of Whipple, diagnosed during life. They state that the nature of the fat-absorption defect has been studied quantitatively for the first time and is of the same order of severity as in idiopathic sprue. The post-mortem and histological findings support the view that the disease arises primarily in the intestinal mucosa and not as a non-specific sequel to mesenteric lymphatic obstruction. A substance giving the staining reactions of glycoprotein was present in the infiltrating mononuclear cells of the intestinal mucosa and mesenteric nodes.

Malignant Polypi of the Rectum and Sigmoid.

EDWIN R. FISHER AND RUPERT B. TURNBULL, JUNIOR (*Surgery, Gynecology and Obstetrics*, May, 1952), state that owing to the incidence of benign polypus and its relationship to carcinoma of the colon and rectum, the intestine is a most important site for cancer detection and prevention. The histological criteria for the diagnosis of carcinoma arising in a polypus consist of (i) anaplasia characterized by variation in the size of cells and their nuclei, atypical mitoses and prominent nucleoli, (ii) irregularity characterized by true stratification, intraglandular budding and loss of cellular and nuclear polarity, and/or (iii) invasion. A descriptive classification of carcinoma arising in a polypus is presented. Malignant change limited to the glandular structures of the polypus without evidence of invasion of the *lamina propria* is considered as carcinoma *in situ*. A lesion demonstrating invasion of the *lamina propria* of the polypus, but without invasion of the *muscularis mucosa* or

lymphatic and vascular channels, is termed superficial carcinoma. The presence of invasion of *muscularis mucosæ* and/or lymphatic and vascular spaces is characteristic of invasive carcinoma. The occurrence of a desmoplastic tumour stroma in the invasive carcinomata has been a valuable histological aid in establishing this degree of malignancy. Carcinoma *in situ* and superficial carcinoma arising in a polypus in the rectum and lower part of the sigmoid colon are treated locally. Fourteen patients in this series with such lesions have been followed for two to ten years and no recurrence of their disease has been observed. Invasive carcinomata arising in polypi are treated by abdomino-perineal resection, except in the aged or debilitated, or in the patient who is a "poor surgical risk".

Testicular Tumours.

E. S. J. KING (*The Australian and New Zealand Journal of Surgery*, August, 1952) discusses 12 cases of tumour of the testis in which there was an association of a seminoma and a "teratoma", and describes three of these in detail. He states that the malignant "teratomata" do not usually show a degree of multidifferentiation greater than is seen in many carcinomata in other parts of the body, but usually show only one form of this. The evidence for the opinion that these are really teratomata is therefore of the slenderest, and the reasons for considering that they are not so are discussed. These tumours (both the "teratoma" and the seminoma) are regarded as arising from the cells of the testicular tubules. The author states that the term teratoma, by definition, should be applied only to such tumours as show considerable multidifferentiation, and the term should cease to be used as applying to those in which this is not true. For this reason it should not be used for those malignant forms of epithelial growth which differ from the seminomata. Tumours of this kind should be designated carcinoma. The seminoma is a carcinoma, but, in view of its characteristic features, this or some comparable term should be retained at present. In this way over 95% of the growths of the testis, which constitute the malignant epithelial tumours, would fall into two subgroups, the carcinoma and the seminoma.

Necrosis in Thyroid Gland Nodules and the Formation of Cysts.

E. S. J. KING (*The Australian and New Zealand Journal of Surgery*, May, 1952) states that several features of the pathology of the thyroid gland are well known: localized hyperplasia results in the development of multiple nodules; cysts corresponding to and replacing nodules of the gland are found commonly; considerable variations in distribution of blood supply, often but not necessarily related to glandular activity, may be associated with hæmorrhage. Infarction with complete or partial necrosis of a nodule, sometimes associated with hæmorrhage, occurs from a vascular disturbance of uncertain nature. Since this takes place in individuals with normal vessels and since gross changes in blood supply are well recognized, it is probable that a deviation of blood from some part of the gland is due to the action of an arterio-venous shunt. Some cysts have a smaller or larger amount of necrotic material in their walls. It may be concluded from this that the necrotic material in a nodule disintegrates and liquefies with formation of a cyst. An important mode of development of the cysts of the thyroid, therefore, is the result of necrosis supervening on a disturbance of vascular supply to a thyroid nodule.

Pigmented Basal-Cell Tumours of the Skin.

J. H. W. BIRRELL (*The Australian and New Zealand Journal of Surgery*, August, 1952) has examined histologically a series of 1780 basal-cell tumours and 650 melanomata, using hæmatoxylin and eosin stains for the original routine examination. A group of 66 pigmented basal-cell tumours is recorded and classified. The origin and formation of melanin is discussed. Dendritic melanoblasts can be demonstrated in these tumours and are considered to be at least mainly responsible for the formation of pigment, which is then passed on to the epithelial cells of the tumour. The author states that the pigmented tumours behave in the same way as the non-pigmented otherwise comparable tumours, and their practical importance is their differentiation from melanomata. It is shown that there is confusion between these two groups of tumours. The available literature of pigmented basal-cell tumours is briefly reviewed.

MORPHOLOGY.

Scapula Shape and Muscle Function.

D. M. WOLFFSON (*American Journal of Physical Anthropology*, September, 1950) describes the variations in the shape of the scapula in terms of phylogenetic, racial and constitutional differences. These variations have been attributed by some to heredity and by some to function, particularly in the case of the contour of the vertebral border, which is an individually variable feature. In the experiment described by the author, 33 operations were performed on newborn rats, in which muscles were removed or severed from the scapula; the results show that muscle function greatly affects not only the shape of the vertebral border, but also the size of the scapular spine and the size of the fossæ. This kind of experiment is suggested as a necessary step in the understanding of the relationship between form and function in a given structure.

The Formation and Vascular Relationships of the Bile Ducts.

E. V. JOHNSTON AND B. J. ANSON (*Surgery, Gynecology and Obstetrics*, June, 1952) have investigated the relationships of the hepatic ducts to the variable blood vessels and to the lesser lobes and the sulci on the inferior surface of the liver. They state that the supraduodenal portion of the common bile duct was absent as such in 20% of cases. Supraduodenal arterial relationships were present anteriorly in 20% of cases; the posterior superior pancreaticoduodenal artery crossed the retroduodenal portion of the duct in 80%. The cystic duct joined the common hepatic duct at an acute angle in 63% of cases; the junction was of a short parallel type in 20% of cases, of a spiral type in 17%. The hepatic duct was absent in one case. Arteries were present anteriorly to the duct in 43% of cases, posteriorly in 74·3%; aberrant right hepatic arteries were posterolateral to the duct in 20%. The right and left hepatic ducts joined extrahepatically in 94·3% of cases, mostly 0·75 to 1·5 centimetres away from the hepatic tissue within the hilum. In the liver hilum, arterial branches were anterior to the hepatic ducts or the first 1·5 centimetres of the common hepatic duct in only one case; the arteries were mostly to the outer side of the corresponding duct and the portal vein subdivisions posterior. The quadrate lobe ranged in width from 2·0 to 6·0 centimetres. Conveying right and left hepatic ducts emerged opposite the midpoint of the hilar margin of this lobe in 54·5% of cases and within 1·0 centimetre to the right in another 33·3%. Accessory intrahilar hepatic ducts drained into the angle of the confluent right and left hepatic ducts in five of ten specimens dissected; a tributary of moderate size joined the right hepatic duct within the first centimetre of its intrahepatic course in three specimens; in only three specimens the right and left hepatic ducts failed to receive accessory "middle" hepatic ducts, or significant tributaries in the first two centimetres of their intrahepatic course. Extrahepatic accessory ducts were present in 31% of cases.

The Perivascular Space of the Pulmonary Vessels.

A. M. TOCKER AND H. T. LANGSTON (*The Journal of Thoracic Surgery*, June, 1952) have demonstrated by gross, microscopic and radiological methods the existence of a readily identifiable perivascular space about the pulmonary vessels. The relations of this space are shown to the vascular trunks and arborizations within the lung. Comment is made on its relation to the pericardium and the contralateral vascular bed. The authors state that the information acquired about the nature and extent of these perivascular spaces is of great practical value in the performance of pulmonary resection and may well explain certain pathological processes.

Effect of Aging on Stature.

M. TROTTER AND G. GLESER (*American Journal of Physical Anthropology*, September, 1951) present data from 355 cadavers to determine changes in stature after maturity. They state that there is a statistically significant decline of stature with age in each sample. This relationship is homogeneous for Negroes and whites of both sexes, so that an estimate of the partial correlation for the total population studied was −0·25. The rate of decrement is likewise uniform in all groups and amounts to an estimate of 1·2 centimetre per twenty years. Rollet's data based on 50 male and 50 female French cadavers were found to show the same relationship of stature to age as exists in the American samples, yielding again an estimate of a 1·2 centimetre decline per twenty years. Thus, it is indicated that this average rate of decline in stature may be applicable to the general population.

Special Articles for the Clinician.

(CONTRIBUTED BY REQUEST.)

XXXIX.

SPRAINS AND STRAINS.

INJURIES to ligaments, muscles and tendons receive relatively little attention in undergraduate instruction, as in interest they lag behind the more spectacular and less common diseases demonstrable at operation or autopsy. However, a short time in practice brings realization that sprains and strains carry a degree of discomfort and disablement out of proportion to the meagre mention allotted them in teaching and text-book. A tribute to the importance of these conditions and a plea for fuller instruction came early in World War I with the publication of Robert Jones's small book, which could well be reread today.

In general terms the importance of X rays cannot be overstressed in these days of litigation. Even though the detachment of a spicule of bone may have no bearing on the management or prognosis of a particular injury, the report of "chip fracture" may well have added significance; and we know only too well the possible end-result of a random X-ray report.

In some cases the diagnosis "sprain" or "strain" will be applied loosely for want of a firm diagnosis—more so when the underlying pathology is in doubt, or when rapid resolution takes place. In fact, it is only in the severe types of injury that opportunity offers for visual demonstration of abnormality by operation, or for the disclosing of an abnormal range of joint movement by X-ray examination. In the severe grades of ligamentous injury there is associated damage to the synovial membrane and joint cartilage, and the extent of the latter may not show in X-ray films until months or years later.

Where there is well-established degeneration in the joint, as in many patients in the older age groups, the reaction of that joint to a sprain will be more marked and more prolonged than that seen in a normal joint exposed to like trauma. This aspect is of considerable importance, and in an aging population the care of the "chronic joint" exposed to various traumata is becoming a frequent problem. In general terms, the treatment of the acute phase demands rest and local support in a degree varying with the severity of the reaction in the joint and surrounding soft parts, and the duration of this rest and support will depend on the rate at which the pain and local reaction subside. While the injection of a local anæsthetic agent can have a dramatic effect in minor degrees of ligament damage, its use, especially with little or no support, is to be condemned as basically unsound in the process of repair.

With the passage to the subacute phase, the degree of activity allowed and the extent of local support required will vary considerably, and the amount of local reaction and the degree of pain are the best guides to progress; when there is any doubt, a slow and steady course is preferable in order to avoid a local relapse.

Difficulty is found when there has been little or no initial rest and support, or when a rapid rate of progress has been demanded of or by the patient. Here the condition may become chronic, with repeated exacerbations following any extra effort or fresh trauma, and the judgement of the practitioner and the satisfaction of the patient can be put to a severe test. In such cases the underlying condition of the joint is suspect, and where there is repeated local reaction, then rest and support and a fresh beginning are indicated. However, when there is more pain than the extent of local reaction would lead one to expect, then injection of local anæsthetic into the point of maximum tenderness, followed by free use of the limb, is worth considering in the case of the timid type of patient or when the degree of disability may perhaps be obscured by the factors of compensation or litigation. This procedure may give rise to a flare-up of local reaction, and a previous warning will help in maintaining confidence. Injection of local anæsthetic can also be used in the earlier phases to allow pain-free opening-up of a joint to demonstrate by X rays the degree of ligament rupture.

In proportion to their frequent mishaps, children suffer few major sprains, and these resolve rapidly with a minimum of rest and local support. The rapidity of response to treatment is less in adolescence and with increasing age diminishes until, in the elderly, a trivial sprain may run a prolonged course resisting all attempts to hasten recovery. Stress can again be laid on the importance of the "local age", as shown by the degenerative changes in the affected joint.

Each area has its own problems, which are detailed briefly below.

The Knee.

In the lower extremity, sprains have their greatest incidence in the knee joint, owing to the hazards of sport and occupation. In the more severe injuries multiple lesions are usual, and the association of medial meniscus and internal lateral ligament damage is frequent, with the occasional addition of cruciate ligament damage for good measure. The full extent of the damage may not be evident at an early stage, owing to the severity of pain on examination and the massive joint effusion. Immobilization in a plaster back slab or aluminium back splint, or occasionally in a Thomas splint with skin traction is indicated. Later, this can be modified when the full extent of damage is assessed. When cruciate ligament damage or massive collateral ligament rupture has occurred, the application of a full leg plaster splint is indicated for as long as two to three months. For less severe ruptures a short back slab will suffice, while minor ruptures will be held in position by local bandages. Injuries to one or other meniscus may be evident early by complete block to extension; but in most cases the lesion shows up later, when increased activities begin. In many a "sprained knee" drifting into the chronic stage, with recurrent effusion, a damaged meniscus is the basis of the abnormality; the amount of damage is not necessarily so great as to demand immediate operation, and the patient and practitioner will require evidence of continued disturbance before resorting to removal.

By far the most common injury is a partial rupture of the internal lateral ligament at the upper or lower attachment. Back slab immobilization with the knee "off the lock" in a few degrees of flexion is indicated when the severity of the pain demands it. Later, local bandaging, with building up of the heel and sole one-eighth of an inch on the inner side and in-toe walking will suffice. In the lesser grades of injury the latter course will give adequate relief from the outset. Here, as in all knee injuries, the importance of maintaining or restoring quadriceps power cannot be overstressed, and for this purpose the Delorme exercises are most valuable. This method demands the lifting of maximum possible weight against gravity from right-angle flexion to full extension in well-sustained contraction. One session daily of six to ten lifts will suffice and additional weight is added to the foot with increasing power. Some increase in local reaction and pain may occur, but reassurance will enable the patient to work through this phase.

Lesions of the external lateral ligament are uncommon and, when severe, may be associated with stretching of the lateral popliteal nerve; the prognosis for recovery of the latter is doubtful.

In cases of chronic or recurring pain in relation to the external lateral ligament, the possibility of a cyst of the lateral cartilage should be kept in mind. In the early stages this may be small and evident only on partial flexion of the knee, when palpation will disclose fullness in front of the ligament and not evident on the normal side. Removal of cyst and meniscus is indicated.

One source of chronic pain and local tenderness on the medial side of the knee joint is revealed by X-ray films showing paracondylar calcification in relation to the medial condyle of the femur. This result of old trauma can cause considerable disability, and frequently is so resistant to conservative treatment, such as the local application of heat and immobilization, that deep X-ray therapy should be advised. If it is unavailable, then free injection of local anæsthetic and multiple needling to induce local hyperæmia are indicated.

In children a condition of Osgood-Schlatter sprain is found in relation to the insertion of the *ligamentum patellæ*, typically in a heavily built, athletic child aged ten to twelve years. The local tenderness and the swelling, best seen in profile, make the diagnosis rather than the X-ray appearances, which can be confusing. Back-slab immobilization and curtailed activities will suffice to effect cure in two months; further restriction of sport is indicated for another two months. Occasionally resolution may lag considerably when immobilization has been delayed or incomplete, and relapse may follow unrestricted sporting activities. Rarely there is interference with epiphyseal growth, and a *genu recurvatum* may follow.

The Ankle.

In the ankle joint the inversion injury is the common type, with varied degrees of damage to one or more slips

of the lateral ligament. Less common, but by no means rare, are sprains associated with damage to the anterior inferior tibio-fibular ligament and the calcaneo-cuboid ligament. The extent of the damage can be judged readily by the degree of local reaction. Massive local swelling and hæmatoma indicate a severe degree of rupture, which will require full plaster immobilization, without weight bearing, for at least four weeks in order to allow adequate repair to take place. This is followed by firm strapping support; as the swelling subsides this is removed as frequently as necessary to maintain firm pressure, and is continued until local pain, tenderness and swelling have disappeared. This support is no burden and should not be discontinued too soon, as relapse may occur and a "chronic sprain" ensue. Lesser degrees of rupture are treated by strapping alone.

The "weak ankle", which "goes over" readily, and the "recurring sprain" can be shown in an X-ray film, taken with the foot in full inversion, to be due to previous rupture and subsequent poor repair of the lateral ligament; this abnormal range of movement allows an inward tilt of the talus in the ankle mortice. Rarely is surgical repair required, as simple measures are usually found to suffice. These include a prolonged period of strapping or bandaging support, the heel of the shoe being flared out laterally for one-quarter or one-third of an inch to prevent roll. Specific exercises to develop the peroneal muscles are of value here in much the same way as quadriceps exercises are important in the treatment of knee injuries. For th outdoor worker boots are essential for protection on uneven ground. Footstrain and its treatment have no place in this discussion; but in later childhood there occurs a condition which may have an acute onset and which is associated with an accessory tarsal scaphoid. Local pain and tenderness are present, and bone damage may be simulated. The disability settles down in most cases after curtailment of activities, and with the fitting of a Thomas heel with elongation of one to one and a half inches, and an inner build-up of three-sixteenths of an inch. In the severe types an initial period in a plaster splint or in strapping may be required. Rarely is operation required.

The Hip Joint.

In the hip joint region "sprain" is an absolutely untenable diagnosis until repeated X-ray examinations have failed to reveal bone or joint abnormality; especially does this apply to children and adolescents, in whom the underlying condition may well be Perthes's disease, slipped upper femoral epiphysis, or tuberculous hip joint. In the aged a trivial trauma may cause a fissure fracture, giving rise to minimal pain and local signs; but later disruption will cause severe pain and pronounced local signs and typical leg deformity.

Calf Muscle Lesions.

Rupture of calf muscle or *tendo Achillis* is found usually in middle age as the result of some sudden severe effort. Many of the former ruptures are associated with so much pain and calf swelling that the traditional plantaris-rupture pathology is difficult to accept. In the severe type elevation of the limb and rest should be continued until the pain and local reaction have subsided; active dorsiflexion of the foot should be attempted as early as pain will permit; later weight bearing is attempted, with *crêpe* bandage support from toes to knee and the heel built up one-half inch. This build-up is lowered by quarter-inch stages if there is no recurrence of pain.

Rupture of the *tendo Achillis* demands early repair, even if incomplete, as a partial lesion always becomes complete later, and delay will make repair all the more difficult.

Shoulder.

In the upper extremity the shoulder region provides the greater proportion of ligament and tendon injuries. The acromio-clavicular joint is liable to athletic injuries, which range from rupture of a few fibres of the joint capsule, requiring only a few days with the arm in a sling, to complete disruption of the coraco-clavicular ligament constituting a major surgical problem. Between the extremes is the average injury, with subluxation of the joint which responds to the traditional Robert Jones sling applied with full elbow padding. However, in a minority of cases there is a residue of local disability arising from joint damage rather than rupture of the ligament; in this type, arthroplasty should be carried out by removing half an inch or three-quarters of an inch of the outer end of the clavicle.

In the scapulo-humeral joint the rotator cuff is the main site of damage, and when there are preexisting degenerative changes, relatively minor trauma may cause a partial rupture. All cuff ruptures are associated with reaction in the subdeltoid bursa, and even a minor rupture will produce the typical tenderness below the acromion and the catch in the middle range of abduction. When the bursal reaction is great the local pain will be severe, and active or passive abduction will be impossible. In the acute stage rest is essential, and if pain on abduction prevents the wearing of an abduction splint, then rest with the limb in a sling by the side must suffice. As soon as pain permits, daily passive exercises to the fullest possible range are initiated.

Frequently, in the early stages, there is difficulty in assessing the degree of cuff rupture owing to the severity and persistence of pain, and to the loss of function in the rotator muscles in a manner which resembles that due to quadriceps failure after trauma to the knee joint. When possible, rest in an abduction splint is the best way of overcoming this rotator muscle failure. When the rupture is massive—and in actual practice this is uncommon—surgical repair is indicated.

Frequently these cuff lesions, with the associated bursitis, pass on to a chronic phase, and in spite of all forms of treatment subside at a very slow rate. In this type local deep X-ray therapy should be considered, and finally excision of the acromion, to give freedom of movement to the cuff and overlying thickened bursa, is advised.

Maintenance of movement is the main factor of importance in treating cuff lesions. The simplest method is by gravity exercises carried out by allowing the upper extremity to hang relaxed by the side and then bending the trunk forwards and laterally in a slow and careful manner, so avoiding painful muscle spasm.

If shoulder stiffness occurs the prognosis for rapid recovery is poor, and this complication will require prolonged physiotherapy and finally may need manipulation.

Another type of shoulder sprain is rupture of the long head of the biceps, which, when complete, usually causes more deformity than disability. However, when the rupture is incomplete considerable pain may result from tendonitis in the bicipital groove. This condition is intractable and is best treated by open operation and division of the remaining strands of the long head of the biceps, which can be sutured securely elsewhere. Tendonitis of the long head of the biceps can occur without evident deformity of the muscle belly and, if troublesome, justifies exploration and freeing of the tendon.

The Elbow.

In the elbow region the most frequent lesion is the lateral epicondylar condition loosely termed "tennis elbow". The severity and radiation of the pain may be considerable; the diagnostic local tenderness in front of and below the epicondyle may be elusive unless deliberate search is made. The severe grade requires adequate immobilization in a cock-up plaster slab in the early stages; this should be continued for one month. The less severe type demands curtailment of sport or work with regard to the aggravating movements, while the chronic type, if troublesome, requires operation. Rarely, a similar type of lesion is found in association with the flexor muscles arising from the medial epicondyle. The treatment is essentially similar to that of the lateral lesion.

The Wrist and Hand.

The danger of making a diagnosis of wrist sprain and the importance of repeated X-ray examination of the carpal scaphoid need no repetition here. However, mention must be made of that type of wrist injury in which X-ray examination after fresh trauma reveals an old fracture of the carpal scaphoid with associated degenerative changes in the radio-carpal joint in varying degree. This lesion can produce severe pain and local reaction and will require plaster immobilization for some weeks, followed by cautious resumption of activities. Frequently continued disability or repeated relapse will demand surgical intervention.

Stenosing tendo-vaginitis of the radial styloid, with local pain and tenderness, may simulate a wrist sprain. In the earlier stage the characteristic tumour is not yet present, for it takes several months to form. With continued disability operation is strongly indicated.

Occasionally a small, deep-seated dorsal ganglion may give rise to an obscure wrist condition, with pain and limitation of movement. Here also exploration is indicated when disability persists.

Finger-joint sprains, even in the absence of X-ray evidence of bone damage, are prone to run an indolent course with frequent relapse. Local support by almost complete encirclement with elastic strapping is helpful, as also are wax baths when pain and limitation of movement persist.

Extensor tendon ruptures are mentioned only to make the plea for early suture: firstly, of the middle slip rupture at the proximal joint, giving the characteristic deformity of flexion of the proximal and hyperextension of the distal joints; secondly, of the distal joint, when X-ray examination of the dropped tip fails to reveal avulsion of bone.

The Back.

The "strained back" could well be a subject to itself and is worth a few general remarks. With the years the sacro-iliac joint lesion has given way completely to the protruded lumbar intervertebral disk, and, as Oscar Wilde once said of painters, "few indeed escape that nowadays".

The difficulty in localizing the lesion in acute back injuries is not surprising when the overlapping innervation of the deeper vertebral structures is considered, and the local tender spot is not always the basis of the abnormality. While not underestimating the role of the protruded disk in the production of backache, one must stress the fact that the interspinous ligament and the capsule of the apophyseal joints are also liable to rupture, and at laminectomy considerable laxity of one or more interspinous ligaments can usually be demonstrated.

Repeated occurrence of back strains or slow resolution of a back strain demands X-ray investigation to exclude such conditions as spondylolisthesis or ankylosing spondylitis, or to evaluate the significance of loss of depth in one or more of the intervertebral disks.

In the back, as in the regions considered previously, the principle of rest in the acute phase, with graduated resumption of activities, still stands, and the rate of progress and the prognosis are often determined by the preexisting abnormality.

T. V. STUBBS BROWN,
Brisbane.

British Medical Association News.

MEETING OF THE FEDERAL COUNCIL.

A MEETING of the Federal Council of the British Medical Association in Australia was held at the Medical Society Hall, Albert Street, East Melbourne, on August 21, 22 and 23, 1952, Dr. A. J. Collins, the President, in the chair.

Representatives.

The following representatives of the Branches were present:

New South Wales: Dr. A. J. Collins, D.S.O., M.C., Dr. W. F. Simmons, Dr. H. R. R. Grieve, Dr. A. J. Murray, O.B.E.

Queensland: Dr. A. E. Lee, Dr. H. W. Horn.

South Australia: Dr. L. R. Mallen, Dr. C. O. F. Rieger.

Tasmania: Dr. T. Giblin, Dr. J. B. G. Muir.

Victoria: Dr. H. C. Colville, Dr. Charles Byrne, Dr. Robert Southby.

Western Australia: Dr. F. W. Carter, Dr. H. Leigh Cook.

Minutes.

The minutes of the meeting of the Federal Council of February 25, 26, 27 and 28, 1952, which had been circulated amongst members, were taken as read and signed as correct.

Annual Report.

A discussion took place in regard to the annual meeting of the Federal Council, and it was resolved that the first meeting of the Council in each year should be regarded as the annual meeting and that at that meeting the annual report and financial statement should be presented. The action of the President, Dr. A. J. Collins, in not presenting an annual report was endorsed.

Finance.

Dr. W. F. Simmons, the Honorary Treasurer, presented the financial statement for the six months ended June 30, 1952. The statement was received and adopted.

Dr. Simmons presented a statement showing the estimated expenses of the Federal Council to December 31, 1952. It was resolved that the contributions of the Branches to the expenses of the Federal Council for the year 1953 should be at the rate of 21s. per member on the membership list as at January 1, 1953.

Reference was made to the Federal Independence Fund. It will be remembered that at the previous meeting of the Federal Council a discussion took place on the possibility of the return to contributors of the unexpended money in the fund. It was then resolved that contributors should be communicated with individually and informed that the Federal Council was ready to return the residue of their contributions to them *pro rata*. At the same time it was resolved that individual contributors should be informed that the Federal Council thought that the need for such a fund continued and that contributors should be invited to leave at the disposal of the fund the balance to which they were entitled. It was resolved that when a contributor to the Federal Independence Fund had died, the proportion due to him should be paid to the executors of his estate.

Medical Officers' Relief Fund (Federal).

On behalf of the trustees of the Medical Officers' Relief Fund (Federal), Dr. W. F. Simmons presented an interim report for the six months ended June 30, 1952. The report was received. Dr. Simmons pointed out that three loans amounting to £1250 8s. 3d., exclusive of interest, were in existence at June 30, 1952, as against three loans amounting to £1269 6s. 4d. at December 31, 1951, a decrease of £18 18s. 1d. It was resolved that Branch Councils should be asked to publicize the Medical Officers' Relief Fund amongst their members. The report was adopted.

Federal Medical War Relief Fund.

On behalf of the trustees of the Federal Medical War Relief Fund, Dr. W. F. Simmons presented an interim report for the six months ended June 30, 1952. The report was received. Dr. Simmons pointed out that the total assets at June 30, 1952, amounted to £18,691 16s. 1d. He indicated that during the half-year nine benefactions had absorbed £539 13s. 4d. The net decrease in capital of the fund during the half-year amounted to £116 16s. 1d. It was resolved that Branch Councils should be asked to make a further appeal to members for donations to the Federal Medical Relief Fund, and that in the appeal a brief financial statement should be made setting out the financial position of the fund. The trustees' interim report was adopted.

The Henry Simpson Newland Prize Fund.

Dr. W. F. Simmons presented a statement in regard to the Henry Simpson Newland Prize Fund for the twelve months ended August 14, 1952. He pointed out that the balance at that date was £1007. The Council had before it a draft of the terms and conditions of the award of the Henry Simpson Newland Prize Fund as drafted by the committee. The draft was approved. The terms and conditions are as follows:

1. The prize shall be awarded every three years to the writer of the essay adjudged to be the best on a surgical subject.

2. The subject of the essay will be advertised in THE MEDICAL JOURNAL OF AUSTRALIA and the *British Medical Journal* fifteen months before the date of the next award of the prize, and the closing date for receipt of essays will be three months before the date of the award.

3. The prize will consist of a money award of £100 together with a medal.

4. The dissertation should be based on personal observation and experience.

5. The competition is open to any graduate of any university within the British Commonwealth.

6. The essay must be typewritten or printed in English. It must be distinguished by a motto and accompanied by a sealed envelope containing the name and address of the author and having on its outside the corresponding motto. It must not exceed 50,000 words.

7. The committee administering the fund reserves the right to withhold the prize.

8. The prize essay shall be submitted forthwith to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA.

9. The committee administering the fund will be appointed by the Federal Council of the British Medical Association.

Honours.

The General Secretary reported that he had sent congratulations on behalf of the Federal Council to the following medical practitioners who had been honoured by Her Majesty

Queen Elizabeth II: Sir Hugh R. G. Poate, K.B., Dr. J. J. Holland, C.B.E.

Inquiries by Overseas Practitioners in Regard to Practice in Australia.

The General Secretary reported that he had received a number of inquiries from overseas practitioners in regard to the possibility of taking up practice in Australia. He had supplied them with the necessary information.

The Netherlands Dietetic Association.

The General Secretary reported that he had received the programme of the first international congress of dietetics to be held at Amsterdam from July 7 to 11, 1952.

Industrial Medical Association.

The General Secretary reported that he had received advice from Chicago, United States of America, that an industrial health conference was to be held at Cincinnati, Ohio, from April 19 to 26, 1952.

The British Council.

The General Secretary reported that he had received advice from the British Council that a course on industrial medicine in Great Britain was to be held in Manchester and Birmingham from September 18 to October 7, 1952. He had sent the information to the Branches.

The General Secretary also said that he had received from the British Council a request for a comprehensive selection of Australian medical, nursing and public health journals, general or specialist, for inclusion in an exhibition to be held in Bandung on the occasion of the World Health Organization Conference in September, 1952. He had communicated with various bodies in regard to the supplies of books, journals and so on and with the official representatives of the British Council at Sydney and Bandung. The General Secretary's action in cooperating with the British Council was approved.

An International Society for the Promotion of the Welfare of the Deaf.

The General Secretary reported that he had received from the Secretary of the Prime Minister's Department, Canberra, a letter forwarding the copy of correspondence recently received by the Australian Embassy at The Hague, from Dr. M. J. C. Büchli, who had acted as chairman of the International Congress on the Care of the Deaf in June, 1950, in regard to the proposed formation of an international society for the promotion of the welfare of the deaf. The Secretary to the Prime Minister's Department asked for the comments of the Association on the matter. It was resolved that the sending of the reply should be left in the hands of the General Secretary.

Congress of Jewish Physicians at Jerusalem.

The General Secretary advised that he had received a letter from the Medical Association of Israel to the effect that the second world congress of Jewish physicians would be held at Jerusalem from August 10 to 14, 1952. Information had been sent to the Branches.

Australian and New Zealand Association for the Advancement of Science.

The General Secretary reported that he had received a notice that the twenty-ninth meeting of the Australian and New Zealand Association for the Advancement of Science was to be held at Sydney from August 20 to 27, 1952. The appointment of two delegates from the British Medical Association was requested. The action of the President in nominating Professor Harvey Sutton, O.B.E., and Dr. Beatrix Durie as representatives of the Federal Council at the meeting was endorsed.

The West German Medical Association.

The General Secretary reported that he had received from the West German Medical Association a copy of their journal, *Der deutsche Arzt*, asking for an exchange with the journal of the Association in Australia and seeking friendly associations. The reply was left in the hands of the General Secretary.

The United Nations: Department of Information.

The General Secretary reported that he had received a communication from the Department of Information of the United Nations stating that a meeting of non-governmental organizations on problems of United Nations information was to be held at Manila in the Philippine Islands on October 24 to 31, 1952.

Japan Medical Association.

A letter was received from the Japan Medical Association expressing a desire to exchange views on medical problems with the Association in Australia, and to ascertain how doctors were paid for their services and what social position they held. The Japan Medical Association also asked for advice and suggestions that might be useful to the medical profession in Japan. The Federal Council resolved that the letter from the Japan Medical Association should be suitably acknowledged, and that it should be furnished with information relative to practice in Australia which had been sent to the World Medical Association.

Philippine Medical Congress.

A letter was received from the Legation of the Philippines advising that the Philippine College of Surgeons was holding the second Philippine Surgical Congress in Manila from December 2 to 6, 1952. The Philippine College wished to know whether it was possible for the British Medical Association in Australia to be represented at the Congress. The General Secretary said that the information had been sent to the Royal Australasian College of Surgeons and to the Branches of the Association. The sending of a reply was left in the hands of the President and the General Secretary.

Australasian Medical Congress (British Medical Association).

Eighth Session.

The General Secretary reported that His Excellency the Governor-General, Sir William McKell, had accepted the invitation of the Federal Council to be patron of the Congress.

A communication was received from the executive committee of Congress advising of the appointment as Vice-Presidents of Dr. A. L. Dawkins of Western Australia and Dr. S. L. Wilson of New Zealand in the place of Dr. J. Day and Dr. Eardley Button, who were unable to accept the positions. Professor Lambert C. Rogers, of Cardiff, was also appointed a Vice-President. The executive committee forwarded to the Federal Council a complete list of the office bearers of sections.

Letters were received from the parent body in London advising of the appointment of Professor Lambert C. Rogers, of Cardiff, as its representative; and from the Malayan Branch of the British Medical Association advising of the appointment of Dr. James Browne, of Singapore, as its representative.

The President reported that he had approved of the appointment of the following additional honorary members, on the nomination of the executive committee: Dr. E. L. Gault, Dr. H. M. Hewlett, Dr. D. M. Morton, Dr. C. E. Eddy, Dr. A. B. Reese (New York), Dr. John Foster (Great Britain), Mr. H. A. Standish, Professor W. E. Le Gros Clark (Oxford), Mr. E. L. French, Professor Boyce Gibson (Melbourne), Sir Gordon Gordon-Taylor (London), Mr. N. A. M. Wellington, Mr. R. T. Leslie, Miss J. C. Tolhurst, Mr. E. J. Rouse, Dr. James Browne (Malaya), Mr. H. E. Stebbins, Dr. S. P. Aniker (Mysore), Miss F. E. Williams, Mr. G. Buckle.

A communication was received from Sir John Newman-Morris advising of the intention of the University of Melbourne to confer degrees *honoris causa* to members of Congress, including Sir Henry Newland, Dr. Norman Gregg, and distinguished visitors from overseas.

The action of the President in approving the request of the executive committee that the joint subscription for a member of Congress accompanied by his wife who was also a member should be £7 7s. was endorsed.

Ninth Session.

A letter was received from the New South Wales Branch accepting the invitation of the Federal Council to hold the ninth session of Congress at Sydney in 1955.

Australasian Medical Publishing Company, Limited.

The General Secretary reported that he had received a notice of the meeting of directors of the Australasian Medical Publishing Company, Limited, to be held at the Medical Society Hall, Melbourne, on August 24, 1952.

Visit by the Minister for Health.

The Minister for Health, Sir Earle Page, visited the Federal Council on Friday, August 22, 1952, and discussed with them during the greater part of the day matters relating to the *Pharmaceutical Benefits Act* and the Pensioner Medical Service. A free interchange of views took place, and then the Minister left the meeting.

Pharmaceutical Benefits Act.

The Federal Council discussed the amendment to Regulation 14a of the *Pharmaceutical Benefits Act*. In this regulation it was declared that certain pharmaceutical benefits could be prescribed only for the treatment of certain specified diseases. The particular drug or benefit was set out in one column; diseases for which it might be used were stated in another column. The General Secretary brought to the notice of the meeting the letter of the President to the Minister for Health protesting against the amended Regulation 14A. The President reminded the Minister that the Federal Council had made constructive proposals concerning its willingness to conduct educational campaigns, to provide supervisory committees, and through its members on the Pharmaceutical Benefits Advisory Committee to revise and, if possible, to simplify the list of free drugs. These proposals would, in the opinion of the Council, produce a correct appreciation of the place of antibiotics in modern therapy. The new regulation would not, in the opinion of the Council, have that desired effect. The President pointed out that the use of antibiotics as laid down in the regulation was not entirely based upon sound scientific principles; for example, the use of aureomycin in the treatment of subacute bacterial endocarditis was permitted, and yet it was well known that most patients with that disease responded to penicillin.

The General Secretary presented letters from the Western Australian Branch and from the Urological Society of Australasia protesting against the amended regulation.

He went on to say that the Minister for Health had, in reply, agreed to widen the scope of diseases which might be treated by antibiotics, and had also agreed that antibiotics might be used for other diseases so long as authority was obtained from an antibiotics committee. He enclosed a statement for publication in THE MEDICAL JOURNAL OF AUSTRALIA; this was published in the issue of June 7, 1952. It should be noted that the Minister, in his letter, suggested that the profession might assist by using the local medical association of the several Branches to help in the matter, and that the president or secretary of each local association should be the responsible authority which would authorize any approved prescription of the drugs in question.

The General Secretary then explained that he had sent to the Branches a letter with a suggested amendment of Regulation 14a together with an "antibiotic work sheet" prepared by Dr. Edgar H. Thomson. The General Secretary then read a reply from the Minister to the President's letter of protest and referred to a statement which he had sent for publication in THE MEDICAL JOURNAL OF AUSTRALIA. He said that consideration was being given to the various suggestions that had been made for overcoming some of the weaknesses in the scheme of control. He also read a letter to the Minister in which it was stated that the proposal of the Minister and of the Director-General of Health that local associations should be used for the purpose of authorizing doctors within their region to prescribe restricted drugs, did not meet with the approval of the Branches. He said that it was thought, however, that under the amendment submitted by the Council the requirement that a medical practitioner must communicate in writing with the Deputy Director of Health, and must also furnish a clinical history, would limit considerably the number of applications to use restricted drugs for diseases other than those specified in the regulation. The General Secretary then read a letter which he had received from the Minister for Health, dated July 21, 1952, in which the Minister enclosed a copy of an amended notice. The Minister pointed out that this notice was in line with the recommendation submitted by the advisory committee and by Dr. Edgar Thomson. After further discussion the Federal Council resolved that subject to the appointment of committees of inquiry and their functioning during the ensuing six months the Federal Council would inform the Minister for Health that while it was opposed in principle to restriction of the use of drugs at their source, it would not pursue its objection to the operation of Regulation 14a for that period so long as the work sheet for the use of the restricted drugs was approved by a committee appointed by the Minister on the recommendation of the Federal Council, and/or so long as for national security reasons restriction was necessary.

A letter was received from the Western Australian Branch requesting that an approach should be made to the Director-General of Health with a view to arranging for the Commonwealth Department of Health to issue a second copy of the list of pharmaceutical benefits to all medical practitioners. A reply was received from the Director-General of Health that this would be done. A communication was also received from the Director of Pharmaceutical Services, forwarding twelve copies of "Notes on the Pharmaceutical Benefits Regulations", and stating that doctors might obtain copies from the Deputy-Director of Health in each State.

Further reference was made to the supply of drugs for the use of medical practitioners in their bags. The General Secretary said that he had sent a common letter to the Branches reporting the result of an interview with the Minister. He had supplied to the Minister a list of drugs which, in the opinion of a subcommittee of the Federal Council, should be included in doctors' bags. The list was before the meeting. The Minister had said that he had it under consideration and added that he was giving consideration to the suggestion that morphine, pethidine and physeptone should be eliminated altogether from the list of pharmaceutical benefits. Branches had been asked for their views. After discussion the Federal Council resolved that in its opinion medical practitioners should be entitled to prescribe on their own prescription form drugs for emergency use which were included in the list of pharmaceutical benefits. It reaffirmed its previous decision that supplies of emergency drugs should be obtainable by medical practitioners from wholesale sources. It also expressed the opinion that morphine, pethidine and physeptone should be retained in the list of pharmaceutical benefits.

A discussion took place on the limitation of the price list of drugs supplied under the Act. A communication was received from the Director-General of Health, forwarding a statement which he had sent to all pharmaceutical chemists. A letter was also received from the Director-General of Health advising of action taken to limit the costs of benefits supplied, and of a new price list in the course of preparation. The Federal Council resolved to protest strongly against the exclusion of any brand of drug contained in the list of pharmaceutical benefits provided under the *Pharmaceutical Benefits Act*, or of any drug or combination of drugs available under the Pensioner Medical Service, on the ground of price.

Mention was made of the Pharmaceutical Benefits Advisory Committee. The General Secretary reported that the President had protested to the Minister for Health against the unsatisfactory position in regard to the powers of the Committee. The Minister explained that the difficulty in giving definite official status to the committee arose from the fact that the committee was working under the previous Government's *Pharmaceutical Benefits Act*, which had never contemplated the functioning of such a body of doctors. So far there had not been time to prepare a master *Health Act*. He hoped to be able to complete the matter before long.

Later on in the meeting the Federal Council passed the following motion in regard to the supply of pharmaceutical benefits to medical practitioners:

> 1. That the offer of the Minister for Health that a medical practitioner be entitled to requisition on his own form drugs for emergency use which are contained in an approved schedule list, subject to an initial declaration of stock by the practitioner and to the marking of the form with the words "for professional use", be accepted.
>
> 2. That the list of drugs for emergency purposes submitted to the Director-General of Health by the General Secretary be approved with the addition of ampoules of aminophyllin.
>
> 3. That the determination of the quantities of the emergency drug that a medical practitioner may requisition for, be left in the hands of the President and the General Secretary.

Pensioner Medical Service.

It will be remembered that at the last meeting of the Federal Council a discussion took place on the remuneration which was to be paid to medical practitioners in respect of the service to pensioners, under the scheme of the Pensioner Medical Service. On that occasion the Federal Council resolved, after having heard the views of the Minister and of Treasury officials, that it would seek payment for services rendered to pensioners at the rate of 10s. 6d. per consultation and 12s. 6d. per visit, retrospective to January 1, 1952. It also decided that in the event of the Minister for Health

offering a lesser sum than 10s. 6d. and 12s. 6d., the Federal Council would inform him that it would refer the matter to the Branches for their consideration. The General Secretary reported that he had received a letter from the Minister in reference to the decision arrived at at the Hobart meeting, asking for information justifying the increase in rates for attendance to 10s. 6d. for surgery consultations, and 12s. 6d. for a domiciliary visit. The matter had been referred to the Branches, and the President had then written advising the Minister for Health that the rates of 10s. 6d. and 12s. 6d. were the values which the profession put on its services, and that it was not proposed to discuss their significance. Subsequently the Minister had written making an offer of 9s. and 11s. as rates for attendance, subject *inter alia* to a three years' agreement. The Minister's offer was conveyed to the Branches and varying replies had been received. After discussion, the Federal Council resolved, on behalf of the medical profession in Australia, to accept the proposal of the Commonwealth Government that the rates for attendance by medical practitioners on pensioners should be 9s. per consultation and 11s. per visit for a period of three years as from January 1, 1952.

A letter was received from the Queensland Branch requesting a satisfactory definition of a "dependant" for the purpose of the Pensioner Medical Service. It was resolved that the question of the definition of "dependant" should be referred to the Pensioner Medical Service Advisory Committee. The General Secretary reported that as a result of correspondence with the Director-General of Health, the Western Australian Branch had made a request some weeks previously for the holding of a special meeting of the Federal Council in order to determine the Council's attitude to departmental action in regard to the pharmaceutical medical services operative under the Pensioner Medical Service, and also the pharmaceutical services under the *Pharmaceutical Benefits Act*. The General Secretary reported that before a special meeting could be held, a request had to be made by three Branches, but that in this instance none of the Branches had endorsed the request of the Western Australian Branch.

The Council then discussed the number of pensioners whom practitioners were called upon to attend. After discussion, it was resolved that Branch Councils would be invited to consider whether the Federal Council should represent to the Commonwealth Government that a limitation should be placed on the number of pensioners for a proportion of the population entitled to pensioner medical service, especially in view of the fact that the Government was considering whether the means test for pensioners should be increased, so as to prohibit a greater number of persons being entitled to pensioner benefits.

General Medical Services.

The Federal Council had before it a statement issued by the Commonwealth Department of Health in reference to the proposed scheme for the provision of medical benefits under a national health service, and also a copy of the proposed subsidies for minimum and optional services. This gave rise to a good deal of discussion. The Federal Council had before it a letter from the Victorian Branch recommending that the medical profession in Australia should refuse its cooperation in a scheme of Government-subsidized medical benefits under the *National Health Service Act*, 1948, and urging the repeal of that legislation and its substitution by an Act acceptable to the medical profession. The Victorian Branch also advised that, in its opinion, the preliminary proposals of the Government in relation to scales of benefits were too complicated, and it recommended that when acceptable legislation had been passed the Federal Council should take steps to have scales of benefits simplified. After discussion, the Federal Council adopted a resolution, based on the lines of the Victorian Branch letter, that the profession in Australia should refuse its cooperation in a scheme of Government-subsidized medical benefits under the *National Health Service Act*, 1948. It urged the repeal of that legislation and its substitution by an Act acceptable to the profession. After the Federal Council had heard the views of the Minister, and had received his assurance that a *National Health Act* would be brought down by the Government early in 1953, it offered its continued cooperation in the preparation of the medical benefits scheme. The Federal Council agreed to appoint three representatives to a conference to be called of interested medical benefits societies to consider the matter of the common account form, the matter of the schedule of benefits, and any other matter relating to the scheme of the Commonwealth Government for subsidizing medical benefits. The Federal Council also resolved to inform the Minister for Health that owing to differences in medical fees charged in different areas, and owing to the differences in medical benefits offered by the various approved medical benefits organizations, the Federal Council could give no assurance that the medical benefits available to the public under the National Health (Medical Benefits) Scheme for specific services would bear any fixed relationship to the total medical fees charged for such service.

The Federal Council discussed special services in extra-metropolitan areas, and it approved of the variation by the Councils of State Branches of the rule regarding the number of plates a medical practitioner might exhibit in the case of specialist services in extra-metropolitan areas. The Federal Council further recorded its opinion that medical benefits should be paid only on the production of the medical practitioner's receipt, except in exceptional circumstances when direct payment by the medical benefits organization had been previously approved by the medical practitioner.

Fees Charged by Medical Practitioners.

At its previous meeting, the Federal Council, at the instance of the Tasmanian Branch, discussed the fees charged by medical practitioners. It thought that a subcommittee should be constituted to investigate the present remuneration received by members of the medical profession, and to make recommendations regarding over-all increase in fees charged and in salaries paid to both full-time and part-time medical practitioners. The Federal Council resolved on that occasion that the General Secretary should obtain information from the Branches in regard to the customary charges made by general practitioners in their States in respect of surgery consultations and domiciliary visits. The General Secretary reported that he had received replies from the Branches, and these were noted. A communication was received from the Australasian Association of Psychiatrists seeking approval of a schedule of their fees. Approval was given.

B.C.G. Vaccination.

At its previous meeting the Federal Council discussed the use of B.C.G. vaccine in private practice. It was pointed out on that occasion that some instruction was necessary before medical practitioners could be considered capable of giving the intradermal injection for the vaccination. It was decided that the Post-Graduate Federation in Medicine be approached and asked to arrange courses of instruction. The General Secretary reported that he had done this, and that the Australian Post-Graduate Federation in Medicine had replied that it appeared unnecessary to institute training in B.C.G. vaccination, as the present machinery for training was already quite adequate.

The Federal Medico-Pharmaceutical Liaison Committee.

The General Secretary reported that the Pharmaceutical Association of Australia and New Zealand had accepted the conditions laid down by the Federal Council, but had asked that the President and General Secretary be included as members of the committee. He said that the President had agreed to this request. The President's action was approved.

The Campaign against Tuberculosis.

A communication was received from the Minister for Health seeking the support of the Federal Council for the examination by X rays of all patients admitted to public hospitals without the applications of the means test. The General Secretary reported that Dr. E. W. Frecker, Honorary Secretary of the State Committee of the New South Wales Section of the College of Radiologists (Aust. and N.Z.), had interviewed him on several occasions in regard to the X-ray examination of chests of all patients admitted to public hospitals, and had stated that whilst radiologists were perfectly willing to cooperate in the mass X-ray examination of the community by miniature films, they regarded it as unreasonable to be asked to make an X-ray examination of all patients who were admitted to public hospitals irrespective of their means. The General Secretary said that this matter had been referred to the Branches, and that replies had been received. After discussion, it was resolved that the following principle should be adopted as the Federal Council's policy: (i) No charge should be made to any patient who was radiologically examined as part of a public health survey. (ii) This principle should hold irrespective of whether the examination was made in a special public health laboratory or a general hospital, irrespective of the means of the patient, and irrespective of the size of the X-ray film used. (iii) All such public health radiographs should be reviewed by a qualified radiologist. (iv) Adequate payment of the radiologist should be made by the public health authority.

British Medical Association Overseas Subscription.

It will be remembered that at the previous meeting of the Federal Council, discussion took place on the intention of the Parent Body to increase the subscription of the overseas Branch to the Parent Body. The General Secretary reported that he had been advised by the London office that the Council of the Association had decided to increase the overseas subscription to £2 2s. per member, and that payments in respect of overseas subscriptions would be in Australian currency.

The Illegitimate Child.

The General Secretary reported that he had received from the Parent Body a copy of the report of the Joint Committee on Psychiatry and the Law appointed by the British Medical Association and the Magistrates' Association. The report was entitled "The Law in Relation to the Illegitimate Child".

The British Commonwealth Medical Conference.

The Federal Council received a report from Dr. A. E. Lee, who had been its delegate to the British Commonwealth Medical Conference held at Calcutta, India, in March, 1952. The report was received. Dr. Lee was thanked for his report.

The National Health and Medical Research Council.

The General Secretary presented a report by Dr. W. F. Simmons, the Council's representative on the National Health and Medical Research Council, of the thirty-third session, held at Sydney on May 21 and 22, 1952. Dr. Simmons was thanked for his report.

A communication was received from the chairman of the National Health and Medical Research Council drawing attention to the widespread distribution of leptospirosis, and seeking the cooperation of the medical profession in more accurately determining the incidence of leptospiral strains. The General Secretary said that he had referred the matter to the Branches.

Displaced Persons Medical Register.

The General Secretary reported that he had received from the Director-General of Health, Commonwealth Department of Health, a copy of the "Displaced Persons Medical Register" issued by the International Refugee Organization.

Congress against Alcoholism.

The General Secretary said that he had received from the Director-General of Health, Commonwealth Department of Health, an intimation of the holding of the twenty-fourth International Congress against Alcoholism at Paris on September 8 to 12, 1952. He had sent the information to the Branches.

International Conference on Tuberculosis.

The General Secretary said that he had received from the Director-General of Health, Commonwealth Department of Health, advice of the holding of the twelfth International Congress on Tuberculosis at Rio de Janeiro on August 24 to 30, 1952. The information had been sent to the Branches.

International Conference on Child Welfare.

The General Secretary said that the Director-General of Health had also sent him a notification of the holding of an international conference on child welfare at Bombay, India, on December 5 to 12, 1952. The Branches had been notified.

International Congress on Medical Librarianship.

Advice had been received from the Director-General of Health, Commonwealth Department of Health, that an international congress on medical librarianship was to be held in London during the week commencing July 20, 1953, under the presidency of Sir Cecil Wakeley, K.B.E., C.B., President of the Royal College of Surgeons of England. The question of representation at the congress was left in the hands of the President and the General Secretary.

Heroin.

At previous meetings of the Federal Council consideration had been given to representations made by the World Health Organization in regard to the prohibition of the manufacture of diacetylmorphine, or heroin. It was pointed out that many countries had agreed to the abolition of this drug of addiction, but that the Federal Council had come to the conclusion that the drug was valuable and supplied a need that could not be met by any other medicament. The matter was brought up again for consideration by a communication from the Director-General of Health, who enclosed a copy of correspondence from the Director-General of the World Health Organization asking to be advised of the views of the medical profession in Australia regarding the discontinuance of diacetylmorphine for medical use. The Federal Council discussed the matter at some length and reaffirmed its previous decision that there should be no curtailment of the availability of heroin to the medical profession in Australia.

World Medical Association.

Dr. L. R. Mallen gave a brief report of the meeting of the Council of the World Medical Association, held at Brussels from April 28 to May 2, 1952.

At its meeting in Hobart in February, 1952, the Federal Council appointed Dr. L. R. Mallen to be delegate of the Federal Council at the sixth General Assembly of the World Medical Association to be held at Athens on October 12 to 16, 1952. Subsequent to that, Dr. H. W. Horn gave notice of motion that the resolution in question of the Hobart meeting should be rescinded and the matter reopened. After Dr. Horn had moved his motion, the matter was discussed and the opinion was expressed that Australia should be represented by a delegate other than by one of its practitioners who was a member of the Council of the World Medical Association. It was therefore resolved that Dr. T. Giblin be appointed a delegate to attend the General Assembly at Athens in October, 1952. Dr. Adrian Johnson was appointed observer to attend the General Assembly.

A communication had been received from the secretary of the World Medical Association stating that it was proposed to amend the by-laws by the addition of a clause to By-law 7 as follows: "The Council shall have the authority to defer or waive payment of dues of any member-association in case of financial hardship." It was resolved that the proposed amendment should be approved.

At a previous meeting of the Federal Council a communication was received from the general secretary of the World Medical Association inquiring what arrangements were available for a person who became ill in a foreign country so far as Australia was concerned. A suitable reply had been sent. A further communication had been received from the World Medical Association advising that the majority of constituent associations had stated that foreign nationals had no difficulty in arranging for medical care, and asking to be informed of the exact procedure for a foreign national to receive prompt medical care. The reply was left in the hands of the General Secretary.

A communication was received from the general secretary of the World Medical Association in regard to the forthcoming international conference on medical education, forwarding a copy of an outline of the organization and of the programme. A letter was also received from Dr. A. M. McIntosh advising that owing to illness, Sir Henry Cohen would be unable to act as chairman and would be replaced by Sir Lionel Whitby. After discussion, the Federal Council decided that a letter should be sent to the Vice-Chancellor of each of the Australian universities and to bodies interested in medical education advising of the international conference on medical education and of the desirability of their being represented at the conference.

A letter was received from the Secretary-General advising that the fifth General Assembly had reaffirmed its resolution that one of the primary purposes of the World Medical Association was the maintenance of peace, but drawing attention of constituent members to the fact that they should always be cautious in affiliating or lending support to either medical or other organizations which apparently had peace as their objective, but oftentimes had undoubted political tendencies.

A letter was received from the Secretary-General advising that invitations from member associations wishing to be the host of the ninth General Assembly in 1955 would be considered at the sixth General Assembly to be held at Athens. The Federal Council resolved to invite the World Medical Association to hold the ninth General Assembly in Sydney in 1955.

Repatriation Department.

Medical Benefits for Widows, Widowed Mothers and Orphans, 1914-1918 *and* 1939-1945 *Wars.*

At its previous meeting, consideration was given by the Federal Council to the method of payment for attendance on

widows, widowed mothers and orphans of the 1914-1918 and 1939-1945 wars. At the time, consideration was deferred until such time as a satisfactory agreement had been reached with the Minister for Repatriation in regard to the fees payable to local medical officers. The matter was again brought up for discussion, and consideration was once more deferred.

Fees Payable to Local Medical Officers.

Members of the Federal Council did not need to be reminded that heated discussion had taken place on the fees payable to local medical officers, and that it had been impossible to reach any agreement with the Minister for Repatriation. The General Secretary reported that he had now received a reply from the Minister for Repatriation advising that he was still unable to obtain a decision from the Minister responsible for authorizing an increase in the rates of payment. In a subsequent communication the Minister had advised that it was proposed to wait on the outcome of discussions on rates for attendance under the Pensioner Medical Service before any consideration was given to a decision on the request for an increased fee for local medical officers. The Federal Council resolved that the Minister for Repatriation should be informed that in the event of no satisfactory agreement being reached by December 31, 1952, in regard to the payment of fees to local medical officers, the Federal Council would have no alternative but to recommend to local medical officers that they terminate their agreement with the Department.

Fees for Consultation at a Specialist's Room.

The General Secretary reported that correspondence had taken place with the Chairman of the Repatriation Commission regarding the fees payable for consultation at specialists' rooms. The Chairman had suggested that it would be more expeditious to submit to the authority, from whom approval had to be obtained for increased expenditure, a comprehensive scale of fees covering all medical services rendered to all Commonwealth departments. The Federal Council resolved that an investigation should be made in regard to the fees paid by the Commonwealth departments to private medical practitioners with a view to seeking uniformity.

Prescriptions Written by Local Medical Officers.

The General Secretary advised that instructions had been issued to local medical officers that when a local medical officer wrote a prescription for which the recipient did not have official entitlement, the cost of the prescription would be debited to the local medical officer. The Western Australian Branch had written asking the Federal Council to protest strongly against this instruction. The Federal Council resolved that a request should be made to the Repatriation Department that the operation of the regulation relating to prescribing by local medical officers should be preceded by an opportunity for the local medical officer concerned to justify his action to the senior medical officer of the Repatriation Department.

Administration of Medical Services.

Further consideration was given to the question of medical control of the Repatriation Medical Services. The Federal Council decided to stress to the Minister for Repatriation the advisability of a medical practitioner being a member of the Repatriation Commission.

Ships' Surgeons.

The Federal Council received a communication from the New South Wales Branch in regard to the payment of ships' surgeons. It was pointed out that the ship's doctor was one of the lowest paid members of the crew, and that the amount of time that he had off duty was unsatisfactory. The Federal Council resolved to make a further approach to the Australasian Steamship Owners' Federation with the request that the salary of a permanent ship's surgeon should be £1500 *per annum*.

Fee for Life Assurance Examination and Report.

The General Secretary reported that he had received a communication from the Life Offices Association for Australasia advising that it was unable to increase the fee now being paid, namely, £1 11s. 6d., to £2 2s. The Federal Council resolved that a further approach should be made to the Life Offices Association with a view to having the fees increased to £2 2s.

Australian Post-Graduate Federation in Medicine.

Dr. C. O. F. Rieger gave a report of the meeting of the Australian Post-Graduate Federation in Medicine, which was held in Adelaide on May 27, 1952, and which he had attended as representative of the Federal Council.

It was noted that the annual general meeting of the Federation was to be held in Melbourne on August 23, 1952.

Australian Red Cross Society.

The General Secretary presented a report which he had received from the Australian Red Cross Society dealing with blood transfusion activities in Great Britain, the United States of America, and Europe. The report had been written by Dr. Edgar Thomson. The report was received.

Income Tax Assessment Act.

The General Secretary presented a communication from the Taxation Institute of Australia, requesting support of the Federal Council in representations to the Treasurer in regard to amending the *Income Tax Assessment Act* relating to provisional tax. The General Secretary pointed out that the *Income Tax Assessment Act* as amended by the *Amending Act* Number 28 of 1952, required a taxpayer—for example, a medical practitioner—whose income was derived from sources other than salary and wages (i) to calculate provisional tax based on the income of the previous year, (ii) on receipt of his assessment, which included his provisional tax, to remit the full amount, or (iii) to make an estimate of what his profit would be in the current year, calculate the amount of provisional tax payable by him on that profit and remit the amended amount as calculated to the Commissioner in lieu of that shown by the Commissioner's assessment. To avoid incurring penalties under the new provisions the taxpayer must make an estimate of what his income would be for the current year upon receipt of his assessment for the previous year or on March 31 (whichever was the later). Should the taxpayer's income exceed his estimate by more than 20%, a fine of 10% flat might be imposed. The same fine might be applied where a taxpayer accepted and paid the Commissioner's assessment and his income for the current year exceeded his previous year's income by more than 20%. The direct result of the legislation from the taxpayer's point of view would be the preparation of two sets of accounts each year—one for his estimate of income in March and one for his return in June. Where a taxpayer employed an accountant to do his accounts it would mean extra accounting fees. The Federal Council resolved that representations should be made to the Commonwealth Treasurer for an amendment of the *Income Tax Assessment Act* relating to provisional tax, and that the Taxation Institute of Australia be advised accordingly.

Date and Place of the Next Meeting.

The date and place of the next meeting were left in the hands of the President.

Votes of Thanks.

Votes of thanks were passed to the Victorian Branch for its hospitality and the use of its offices, and to Dr. H. C. Colville, Dr. C. Byrne and Dr. R. Southby for their hospitality. Votes of thanks were extended to the President, Dr. A. J. Collins, for presiding, and to the Secretariat for their services.

VICTORIAN BRANCH NEWS.

Section of Industrial Medicine.

A SECTION OF INDUSTRIAL MEDICINE of the Victorian Branch of the British Medical Association has now been formed. The objects of this section are (*inter alia*) generally to advance the knowledge, practice and status of industrial medicine. Membership of the section is open to all members of the Branch. Any members desirous of joining the section are requested to communicate with Dr. S. Crawcour, 27 Mercer Road, Armadale, S.E.3. The first general meeting will be held on Thursday, October 30, 1952, at 8.15 p.m., in the Medical Society Hall, 426 Albert Street, East Melbourne. The President of the section, Dr. D. O. Shiels, will give an address on "The Importance of Industrial Medicine from the Point of View of the General Practitioner".

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

MEDICAL WITNESS ACT.[1]

Anno Primo Victoriæ Reginæ.

No. 3.

An Act to provide for the attendance of Medical Witnesses at Coroners Inquests and Inquiries held by Justices of the Peace.

Whereas an Act was passed in England in the sixth and seventh years of his late Majestys reign intituled "An act to provide for the attendance and remuneration of Medical Witnesses at Coroners Inquests": and it is expedient to extend the several provisions of the said Act to this colony, in the manner hereinafter mentioned. Be it therefore enacted by His Excellency the Governor of New South Wales, with the advice of the Legislative Council thereof, that after the passing of this Act, whenever, upon the summoning or holding of any Coroner's Inquest, or upon the holding of any Inquiry by a Justice or Justices of the Peace, touching the death of any person, it shall appear to the Coroner, Justice or Justices (as the case may be) that the deceased person was not, at, or immediately before his death, attended by any legally qualified Medical Practitioner, it shall be lawful for such Coroner, Justice or Justices to issue a summons for the attendance, as a witness, at such Inquest or Inquiry of some legally qualified Medical Practitioner, in actual practice, who shall reside near to the place where such Inquest or Inquiry is holden. But that where the deceased person was attended by any such practitioner the Coroner, Justice or Justices shall issue a summons for his attendance only, or, if the deceased was attended by more than one such practitioner, the Coroner, Justice or Justices may cause all, or any of them, to be summoned, at his or their discretion.

II. And be it enacted, That it shall be lawful for the Coroner, Justice or Justices, either in such summons, as aforesaid, or by an order in writing, at any time before the termination of the Inquest or Inquiry, to direct any legally qualified Medical Practitioner to perform a post-mortem examination of the body of the deceased, either with or without an analysis of the contents of the stomach and intestines: Provided, that if in any case it appears to the Coroner, Justice or Justices (as the case may be) that the death of such deceased person was probably caused either partly or entirely, by the improper or negligent treatment of any Medical Practitioner or other person, then such Practitioner or other person shall not be allowed to perform, or assist at any such examination or analysis, although he shall in every such case be allowed to be present thereat.

III. And be it enacted, That whenever it shall appear to the Coroner, or to a majority of the Jury, or to the Justice or Justices, or a majority of them at any such Inquiry, that the cause of death has not been satisfactorily explained, by the Practitioner or Practitioners examined in the first instance at such Inquest or Inquiry, the Coroner, Justice or Justices shall forthwith cause any other legally qualified Medical Practitioner or Practitioners to be summoned as a witness or witnesses at such Inquest or Inquiry and shall direct him or them to perform a post-mortem examination, with or without such analysis as aforesaid, whether such examination shall have been performed previously or not: Provided that, where such additional examination is at the instance of a majority of the Jury, it shall be lawful for such majority to name to the Coroner any particular Practitioner whom they wish to attend, and in that case such Practitioner or Practitioners shall be summoned and no other.

IV. And be it enacted, That when any legally qualified Medical Practitioner has attended at an Inquest or Inquiry, in obedience to any such summons as aforesaid, he shall, for such attendance and for giving evidence at such Inquest or Inquiry, be entitled to receive the remuneration of One Guinea, and (in addition thereto) for the making of any such post-mortem examination the remuneration of Two Guineas and if the place of his residence shall be more than ten miles distant from the place where the Inquest or Inquiry is holden, then such Practitioner shall be entitled to a sum of One Shilling for every mile of such extra distance, in addition: Provided that no remuneration shall be paid for the performance of any post-mortem examination instituted without the previous direction of the Coroner, Justice or Justices (as the case may be): Provided, also, that where the death shall have happened in any public Hospital, Gaol, or other public building, no Medical Officer appointed with a salary to attend such Hospital, Gaol or building shall be entitled to any such remuneration.

V. And be it enacted, That where any such summons or order of any Coroner, Justice or Justices as aforesaid, shall have been served upon any Medical Practitioner to whom the same was directed, or shall have been left at his usual residence, in sufficient time for him to obey the same, and he shall nevertheless, not obey such summons or order, he shall, for such neglect, forfeit and pay a penalty, or sum of not less than Three Pounds, nor more than Twenty to be recovered in a summary way, before any two Justices of the Peace, unless he shall, at the hearing of the case, show a good and sufficient excuse for such neglect to the satisfaction of such Justices: And every proceeding under this section shall be had before such Justices, and every such penalty be awarded, levied and distributed, and the party convicted be entitled to appeal, in the manner respectively provided by an Act of the Governor and Council passed in the Fifth Year of the Reign of His Late Majesty King William the Fourth intituled "An Act to regulate Summary proceedings before Justices of the Peace."

G. GIPPS.

Passed the Legislative Council this 13th day of June, 1838.

WM. MACPHERSON,
Clerk of Council.

[1] The first medical Act passed in Australia, 13 June, 1838 (Supplement to *The Australian*, 10 July, 1838); from the original in the Mitchell Library, Sydney.

Correspondence.

INSIGNIA ON MOTOR-CARS.

SIR: What is the reason for affixing insignia, usually fore and aft, on some doctors' cars? Inquiries from my colleagues have produced no reasonable explanation, but there is obviously a sharp divergence in the profession as to their propriety and efficacy because only a percentage of cars owned by general practitioners and consultants display them. The threadbare reason about securing priority on the road in an emergency is hardly tenable. In such a case where traffic could be a vital delaying factor the ambulance, being on immediate call, is summoned. I suppose these insignia on cars are a helpful adjunct to the carrying out of medical practice, otherwise they would not have official approval, but such cars cruising around popular seaside resorts, sometimes with suspiciously young looking "doctors" at the wheel, do cause justifiable gibes.

Yours, etc.,

August 29, 1952. "CONSERVATIVE".

AUSTRALASIAN MEDICAL CONGRESS (BRITISH MEDICAL ASSOCIATION).

SIR: With the enthusiasm of a novitiate, I thought that perhaps to record a few observations *re* the immediate past Australasian Medical Congress in Melbourne may be of assistance to those, less fortunate than I, to attend, and possibly assist them in making up their minds concerning future congresses.

There were three very colourful meetings, the first at Saint Paul's and Saint Patrick's Cathedrals, the second the inauguration at the Exhibition, and the third the conferring of honorary degrees at the Melbourne Town Hall. Although as a profession we are not particularly addicted to pageantry, it was pleasing to witness some of our most eminent professional men standing side by side with those from other countries, and at least equalling them in cultural stature.

The scientific as well as the social programme was streamlined to give more than a satiety to the most rapacious

appetite. The pleasant meeting of boyhood and student friends and hearing of their various progressions, transgressions and retrogressions provided even further colour. At its conclusion one frequently heard the question: "Did you learn much from the congress?" To endeavour to answer that honestly I would say "no" at first, and then qualify it by stating that one had a great deal of help and confirmation of many problems which have beset others and oneself, as well as receiving considerable inspiration from thoughtful criticisms and demonstrations of modern advances. The main lectures and discussions were given by specialists in their own particular large and small fields, and although not deprecating their important observations, one cannot help but feel there is still needed in the treatment of one's patients a certain amount of skill, an abundance of attention, and more than a little common sense.

Yours, etc.,

32 Collins Street,
Melbourne, C.1,
August 30, 1952.

N. T. HANNAFORD SCHAFER.

ANTIBIOTICS AMOK.

SIR: In your timely editorial of June 28 on "Antibiotics Amok" you quote: "There are no substantial data to indicate that the serious consequences of pyogenic complications cannot be avoided by appropriate therapy, instituted at the onset of their clinical appearance, in infections which are initially viral in origin."

The practice of many practitioners in the treatment of these cases reminds me irresistibly of that of ancient Chinese astronomers in dealing with an eclipse of the sun. The knowledge of these men had such scientific accuracy that they used to predict with certainty the date of these eclipses. When an eclipse actually occurred, however, some of them used to turn out with the whole terrified populace, beating drums and gongs to prevent the "heavenly dog" from gobbling up the sun.

In the last few years it has become widely known that influenza is a virus disease; doctors are even teaching the lay public to refer to it as "virus influenza". It is also known that penicillin has no effect whatsoever on this virus. And yet it is common practice both among general practitioners and in large hospitals to order it as a routine for the initial fever of influenza.

Perhaps some excuse may be made for general practitioners because of their difficulty of detecting early the warning pyrexia which heralds the onset of a secondary infection, and also because of their fear of losing their patients if they refuse to prescribe the fetish that all worship. They, too, like the old-time Chinese astronomers, may be stampeded by popular clamour. But what excuse can we make for doctors in large hospitals and institutions, especially those for chronic patients, where influenza in a mild form is frequently recurring or practically endemic? In some such establishments all patients developing sudden fever are put on routine four-hourly charting; and yet it is the custom immediately to put them on penicillin even when their symptoms of influenza are unmistakable.

I recently worked for several years in such an institution, where I had many cases of influenzal cross-infection. I stubbornly withheld penicillin from all except the very few who developed infective complications; and yet my patients did as well as those of my colleagues, and were more comfortable.

In China today such superstitions as the above are fast dying out. Mass vaccination, for example, is taking the place of invocations to the god of smallpox.

Yours, etc.,

August 25, 1952. CYNIC.

Post-Graduate Work.

THE POST-GRADUATE COMMITTEE IN MEDICINE IN THE UNIVERSITY OF SYDNEY.

Week-End Course at Parramatta.

THE Post-Graduate Committee in Medicine, in conjunction with the Central Western Medical Association, will hold a week-end course at Parramatta on Saturday and Sunday, October 18 and 19, 1952. The programme is as follows:

Saturday, October 18, at Parramatta District Hospital: 2 p.m., registration; 2.30 p.m., "Ovarian Tumours", Dr. S. Devenish Meares; 4 p.m., "Recent Advances in the Treatment of Heart Disease", Dr. R. B. Blacket.

Sunday, October 19, at Parramatta District Hospital: 10 a.m., "Reflections on the Management of Herniæ", Dr. S. Livingstone Spencer; 11.30 a.m., "Affections of the Vagina and Vulva", Dr. S. Devenish Meares; 2 p.m., "Some Aspects of the Surgery of Thyroid Disease", Dr. S. Livingstone Spencer; 3.30 p.m., "Medical Aspects of Thyroid Disease", Dr. R. B. Blacket.

The fee for the course will be £3 3s. Those wishing to attend are requested to notify Dr. K. S. M. Brown, Honorary Secretary, Central Western Medical Association, 22A Hunter Street, Parramatta.

Week-End Course at Newcastle.

The Post-Graduate Committee in Medicine, in conjunction with the Central Northern Medical Association, will hold a week-end course at Newcastle on Saturday and Sunday, October 11 and 12, 1952. The programme will be as follows:

Saturday, October 11, at the New Lecture Hall, Royal Newcastle Hospital: 2 p.m., registration; 2.15 p.m., "Gastric and Duodenal Ulcer", Dr. Avery Jones; 3.15 p.m., "Acute Intestinal Obstruction", Dr. V. J. Kinsella.

Sunday, October 12, at the New Lecture Hall, Royal Newcastle Hospital: 10 a.m., conference on X-ray films and interesting cases, Dr. Avery Jones, Dr. V. J. Kinsella, Dr. B. P. Anderson Stuart; 11.30 a.m., conference (continued); 2 p.m., symposium, "Hæmatemesis and Melæna", Dr. Avery Jones, Dr. V. J. Kinsella, Dr. B. P. Anderson Stuart; 3.30 p.m., general discussion.

Fee for attendance at the course will be £3 3s. Those wishing to attend are requested to notify Dr. H. W. Rundle, Honorary Secretary, Central Northern Medical Association, Chatham Road, Broadmeadow, as soon as possible.

Naval, Military and Air Force.

APPOINTMENTS.

THE following appointments, promotions *et cetera* are promulgated in the *Commonwealth of Australia Gazette*, Number 60, of September 4, 1952.

NAVAL FORCES OF THE COMMONWEALTH.

Permanent Naval Forces of the Commonwealth (Sea-Going Forces).

Resignation.—The resignation of John William McCaw of his appointment as Surgeon Lieutenant (for short service) is accepted, dated 3rd June, 1952.

Citizen Naval Forces of the Commonwealth.

Royal Australian Naval Reserve.

Appointments.—Ian Dan Carter and Richard Harold Charles Rischbieth are appointed Surgeon Lieutenants, dated 19th June, 1952, and 27th June, 1952, respectively.

Royal Australian Naval Volunteer Reserve.

Surgeon Commander Donald Dunbar Coutts, D.S.O., is transferred to the Retired List, dated 28th April, 1948.

AUSTRALIAN MILITARY FORCES.

Royal Australian Army Medical Corps (Medical).

NX700381 Captain W. K. A. Paver is appointed from the Reserve of Officers, 30th June, 1952.

The following officers are appointed from the Reserve of Officers, and to be Captains (provisionally): Honorary Captains VX700288 K. N. McNicol, 30th June, 1952, and QX700166 W. D. Gibbons, 28th July, 1952.

The following officers relinquish the provisional rank of Captain and are transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (1st Military District) in the honorary rank of Captain, 30th June, 1952: QX700162 J. D. N. Yelland and QX700161 W. K. R. Mackenzie.

The following officers relinquish the provisional rank of Captain and are transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (2nd Military District) in the honorary rank of Captain: NX700366 B. N. Goodman and NX700375 W. A. A. Cook, 1st July, 1952, NX700377 G. J. W. Stump, 8th July, 1952, and NX700365 H. L. Thompson, 24th June, 1952.

The following officers relinquish the provisional rank of Captain and are transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (3rd Military District) in the honorary rank of Captain: VX700280 G. A. Rutherford, 3rd June, 1952, and VX700284 P. P. Broughton, 1st July, 1952.

To be Captains (provisionally).—NX700375 Walter Arthur Aufrere Cook, 16th June, 1952, NX700377 Graham Julian Witherington Stump, 23rd June, 1952, VX700287 Alan Michael Dillon, 27th June, 1952, VX700289 John Robert Officer, and NX700380 Kenneth McGowen Doust, 30th June, 1952, NX700382 Ian Maxwell, 7th July, 1952, and QX700167 Kenneth Robert Hayes, 28th July, 1952.

To be Temporary Majors.—Captain 3/40054 J. H. Cater, 7th July, 1952, and 3/40055 G. A. Scott, 1st August, 1952.

Citizen Military Forces.

Northern Command: First Military District.

Royal Australian Army Medical Corps (Medical).—1/39015 Major E. P. Row is appointed to command 2nd Casualty Clearing Station, and to be Lieutenant-Colonel, 14th July, 1952.

Reserve Citizen Military Forces.

Royal Australian Army Medical Corps (Medical).

1st Military District.—The resignation of Honorary Captain P. F. Gill of his commission is accepted, 9th July, 1952.

Royal Australian Air Force.

Permanent Air Force.

Medical Branch.

Wing Commander C. J. N. Leleu, O.B.E., M.B., B.S., D.T.M. and H., is promoted to the rank of Group Captain, 1st July, 1952.—(Ex. Min. No. 71—Approved 27th August, 1952.)

The following are appointed to short-service commissions, on probation for a period of twelve months, 7th July, 1952, with the rank of Flight Lieutenant: William Buckingham (025670), William John Ferguson (025643).

Obituary.

EDWARD JOSEPH STUCKEY.

THE following appreciation of the late Dr. Edward Joseph Stuckey has been sent by Dr. Charles I. McLaren.

Edward Joseph Stuckey was born in Adelaide in 1875, son of J. J. Stuckey, M.A., solicitor and distinguished mathematical graduate of the University of Cambridge. A generation before that the Stuckeys were among the founders of the State of South Australia. E. J. Stuckey received his early education at Saint Peter's College, Adelaide, and passed out from that school as the best scholar of his year. He graduated at the University of Adelaide with honours in physics and mathematics, and then signed articles for three years with the Australian Mutual Provident Society and qualified as an actuary.

But something meanwhile came into Stuckey's life which changed its whole course. Dr. John Mott, great missionary statesman, visited the Australasian universities in 1896 and founded the Australasian Student Christian Union. Stuckey accepted the challenge of Mott's message and vision, and formed an irrevocable purpose to become a medical missionary. Not heeding the strong parting words of protest of the secretary of the Australian Mutual Provident Society ("Good-bye, Stuckey; I think you are a fool—the ball is at your feet and the way open to the highest salary at the top"), Stuckey returned to the university at the age of twenty-three years to study medicine. He graduated in 1903 and served as house surgeon at the Adelaide Hospital.

During his university course Stuckey had varied interests and won distinction. He was not only a university "blue" in lacrosse, but three times represented his State in interstate lacrosse and captained the team in his final game. He was also an outstanding leader in the first-founded of Australian inter-university student societies—the Australasian Student Christian Union.

After hospital service and a visit to Europe, Stuckey returned to Australia to marry Miss F. H. Campbell, M.A., of Melbourne. He and his bride proceeded to China.

Among the equipment with which Stuckey went forth to the conquest of worlds new (and very old) were not only a sense of Christian vocation, a mind trained in science, business and medicine, but also (and an important part of his personal baggage) his beloved lacrosse stick! In North China Stuckey's first assignment was the charge of a country hospital of the London Missionary Society, 200 miles from Tientsin. Language study, more than medicine, occupied Stuckey's attention for the next three years.

The London Missionary Society has on its roll of honour many distinguished pioneer missionaries, including the doctor missionary-explorer, David Livingstone, and Dr. McKenzie, whose pioneering work in Tientsin Stuckey was later to develop; McKenzie had so won the confidence of the Chinese Viceroy that, at a time when Western medicine was deeply suspect, McKenzie was called on to treat the wife of the Viceroy. That ensured the future of his work in Tientsin. After four years in the country, Stuckey was transferred to Peking and there joined a little group of half a dozen medical men who had matured a plan (apparently about as feasible as emptying the ocean with a teaspoon), namely, to build up a scientific medical profession for China. Stuckey was appointed Dean of the Faculty and, two years later, Principal of the Peking Union Medical College. Stuckey's professional interests had turned more and more to ophthalmology, in which specialty, by further study, application and much experience, he came to have an outstanding competence.

The course of Stuckey's formal medical missionary work—though not his helpfulness to the Chinese—was interrupted by the first World War. The British Government, hard pressed for manpower, organized the Chinese Labour Corps for work in France. Stuckey was quick to offer his services and went with the Corps to France, across the Pacific, Canada and the Atlantic, and served in France as eye specialist with the Corps. For his outstanding services he was awarded the O.B.E.

After the war and a furlough in Australia, Stuckey returned to Peking. Meanwhile, something was happening which was due to transform Stuckey's "ocean-with-a-tea-spoon" endeavour into most practical medical politics. J. D. Rockefeller was turning eyes of interest and helpfulness to China. He wanted to help in a great humanitarian way. Rockefeller brought to the problem not only lofty idealism but (as might be expected) much business acumen. An important medical commission was appointed to survey the medical field and opportunity. The outcome was a plan to expend millions of dollars on medical education, and the magnificent new Peking Union Medical College and Hospital came into being. It was the writer's privilege to be in Stuckey's home during the celebrations for the opening of the college and hospital. The prospects in Peking having become so assured, Stuckey, a little later, left Peking for another pioneering adventure—the building of the McKenzie Memorial Hospital in Tientsin. It is just to say that he built it physically, financially, professionally and spiritually. When architects were at their wits' end to see how to utilize the available space for the new buildings and at the same time to provide for the carrying on of the existing medical service, Stuckey was forthcoming with new architectural plans. When money just was not, Stuckey raised by a campaign of education among the great business houses in Tientsin what was required. A fine five-storey hospital of 180 beds has survived Japanese invasion and Communist revolution, and the medical and nursing staff which Stuckey called into being is even now maintaining its loyalty and carrying on amid great difficulties.

Stuckey's main work was medical, but his labours passed far beyond that field. His Mission made use of his business and actuarial abilities to appoint him Mission treasurer. He was a good treasurer, but not in the sense of a naïve (but tragic) comment once passed by a Chinese friend: "You have been treasurer so many years, you must be well off now!" Alas for China's taken-for-granted corruption and "squeeze"!

Stuckey's outstanding contribution to international affairs received recognition by his appointment as delegate on two occasions to the meetings of the Institute of Pacific Relations.

In 1938, Stuckey, much against his desire, but for insistent health reasons, resigned after thirty-three years of self-giving service. He returned to Australia and, until increasing disabilities made it impossible, rendered service for prisoners-of-war. He lived in retirement in Kew till his death in August, 1952.

A great word of Osler's was *"æquanimitas"* and of Churchill's, "imperturbability". Stuckey had them both—and more. The poet T. E. Brown has written of the Divine Being:

> Methinks, in Him there dwells alway,
> A well of laughter, very deep.

Those words might well be applied to Stuckey. He went through life with a smile constantly lightening his countenance and at ready stimulus breaking into a chuckle or a hearty laugh. He had a great collection of anecdotes and jokes—many of them not so old and some quite good!

The Orient, to which Stuckey gave himself, exalts the family and filial piety. Stuckey's family have exhibited that piety by their way of life. They have "sprinkled many nations". His eldest son has an important business position in Hong Kong. A daughter served as a missionary in Papua. Another daughter, with her husband, is among the very few missionaries who have been able to stay on at their educational work in a Christian university in Peking, in spite of the communist pressure, which has rid itself of 5900 of the 6000 Protestant missionaries till recently at work in China. Another son gave strong leadership to the Church in Korea against the Japanese war lords' attempts at totalitarian domination. Yet another daughter is serving the National University at Canberra.

Stuckey "rests from his labours: his works do follow him". The situation today in China is dark, and the future is problematical; but the good that Stuckey built into China will never die.

FREDERICK GUY GRIFFITHS.

DR. E. TEMPLE SMITH writes: I was shocked to learn, on my return from a visit abroad, of the death of Guy Griffiths, but was pleased to read the very admirable "profile" of him by Dr. Douglas Anderson. I feel, however, that I should not view his passing in silence. The portrait shown seems alive with his personality. He was my tent-mate at the Second Stationary Hospital in Moascar, and a more

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED AUGUST 30, 1952.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern Territory.	Australian Capital Territory.	Australia.
Acute Rheumatism	..	..	..	..	1	..	..	..	1
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	..	..	4	..	..	..	..	..	4
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	..	..	..	1	..	..	..	1
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	..	1(1)	13(13)	..	1(1)	..	..	..	15
Diphtheria	3(2)	4(2)	4(3)	..	1(1)	..	..	..	12
Dysentery (Bacillary)	..	2(1)	7(6)	..	..	..	..	1	10
Encephalitis	..	..	..	3	..	..	..	..	3
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	..	..	..	..	..	..	..	..
Infective Hepatitis	..	..	..	..	23(8)	..	..	..	23
Lead Poisoning	..	..	1	..	..	..	..	..	1
Leprosy	..	..	..	..	..	..	..	..	..
Leptospirosis	..	..	1	..	..	..	..	..	1
Malaria	..	..	..	..	..	..	..	..	..
Meningococcal Infection	3(2)	8(6)	3(1)	3(1)	..	..	..	..	17
Ophthalmia	..	..	..	..	2	..	..	..	2
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	1	..	..	..	1
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	1(1)	1	2(2)	11(5)	1(1)	..	..	..	16
Puerperal Fever	..	..	..	..	..	..	..	..	..
Rubella	..	46(12)	..	..	6(3)	..	..	..	52
Salmonella Infection	..	..	..	..	4(4)	..	..	..	4
Scarlet Fever	16(11)	24(16)	12(5)	15(9)	3(3)	5(2)	..	1	76
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	..	..	..	..	..	..	..
Trachoma	..	..	..	..	..	..	..	..	..
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	47(43)	28(17)	12(9)	7(5)	7(6)	1	..	..	102
Typhoid Fever	..	..	..	..	..	..	..	..	..
Typhus (Flea-, Mite- and Tick-borne)	..	..	3	..	..	..	..	..	3
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.

courteous and considerate companion I have never met. His conscientiousness was extreme and meticulous. His personal integrity was inviolable. Nothing could deter him from any course dictated by his honest belief, even if such was against his own interests, as it often was. We used to go some afternoons to Lake Timsah, and he took keen interest in the mechanics of sailing, one of the accomplishments of which he was not master.

I know he would not mind my saying, in reference to his somewhat rigid stance with the head inclined slightly to one side, that this was due to an ocular torticollis, so called, and was necessary to avoid diplopia. But he preferred to remain as he was.

One might say of him, as of the canon in the "Ingoldsby Legends", that he

> . . . was a portly man:
> Of Latin and of Greek and learned lore
> He had good store, yet health was on his cheek.

He was a purist in words and their use, and he contributed several diatribes in this journal on their misuse. He was a good, if somewhat verbose, speaker, and was in fact a unique character. He had my esteem and respect.

Ave atque vale.

GILBERT PHILLIPS.

WE regret to announce the death of Dr. Gilbert Phillips, which occurred on September 12, 1952, at Sydney.

CHRISTOPHER BOLLEN.

WE regret to announce the death of Dr. Christopher Bollen, which occurred on September 12, 1952, at Prospect, South Australia.

WILLIAM ALFRED LESLIE HENDERSON.

WE regret to announce the death of Dr. William Alfred Leslie Henderson, which occurred on September 14, 1952, at Parramatta, New South Wales.

RUPERT SHELDON.

WE regret to announce the death of Dr. Rupert Sheldon, which occurred on September 16, 1952, at Sydney.

Nominations and Elections.

THE undermentioned have been elected as members of the New South Wales Branch of the British Medical Association: Bennett, Pamela Marjorie, M.B., B.S., 1952 (Univ. Sydney); Burnside, Colin Campbell, M.B., B.S., 1952 (Univ. Sydney); Coleman, John, M.B., B.S., 1952 (Univ. Sydney); Coorey, Kevin Dominic Francis, M.B., B.S., 1952 (Univ. Sydney); Dowe, Edward Fitzherbert, M.B., B.S., 1952 (Univ. Sydney); Fisher Wallace George, M.B., B.S., 1952 (Univ. Sydney); Garrett, David Allan, M.B., B.S., 1952 (Univ. Sydney); Joseph, Anthony, M.B., B.S., 1952 (Univ. Sydney); Mitchell, James Frederick, M.B., B.S., 1952 (Univ. Sydney); McGonigal, Keith James, M.B., B.S., 1952 (Univ. Sydney); Patterson, William Hugh, M.B., B.S., 1952 (Univ. Sydney); Radford, Gerald Sydney, M.B., B.S., 1952 (Univ. Sydney); Bell, Peter Kenneth, M.B., B.S., 1951 (Univ. Sydney); Bow, Verner William, M.B., B.S., 1948 (Univ. Sydney); Buckley, Frank John Stanwell, M.B., B.S., 1948 (Univ. Sydney); Doyle, Evelyn Mary, M.B., B.S., 1945 (Univ. Sydney); Halliday, Jonathan Peter, M.B., B.S., 1951 (Univ. Sydney); Howell, David, M.B., B.S., 1950 (Univ. Sydney); Manheim, Anna, registered in accordance with the *Medical Practitioners Act*, 1938-1950, Section 17 (1) (*c*); Rosleigh, Pelagia, registered in accordance with the *Medical Practitioners Act*, 1938-1950, Section 17 (1) (*c*); Sullivan, Neville Nelson, M.B., B.S., 1951 (Univ. Sydney); Taylor, Godfrey Unwin (Flight Lieutenant), M.B., B.S., 1951 (Univ. Melbourne); ten Seldam, Rolf Edward Jan, registered in accordance with the *Medical Practitioners Act*, 1938-1950, Section 17 (2).

The undermentioned have been elected as members of the South Australian Branch of the British Medical Association: Hartshorne, Brian Herbert, M.B., B.S., 1952 (Univ. Adelaide); Sumner, Donald Ernest Wesley, M.B., B.S., 1952 (Univ. Adelaide); Bade, Ronald Werner, M.B., B.S., 1952 (Univ. Adelaide); Watson, Patricia Bali, M.B., B.S., 1952 (Univ. Adelaide); Elms, Valerie Lois, M.B., B.S., 1952 (Univ. Adelaide) (qualified 1951); Hoile, Douglas Edward, M.B., B.S., 1950 (Univ. Adelaide).

Diary for the Month.

OCT. 1.—Victorian Branch, B.M.A.: Stawell Oration.
OCT. 1.—Western Australian Branch, B.M.A.: Council Meeting.
OCT. 2.—South Australian Branch, B.M.A.: Council Meeting.
OCT. 3.—Queensland Branch, B.M.A.: Branch Meeting.
OCT. 3.—New South Wales Branch, B.M.A.: Annual Meeting of Delegates.
OCT. 7.—New South Wales Branch, B.M.A.: Council Quarterly.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federal Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

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